Bonneville Power Administration

Transmission Business Line

2004 INITIAL TRANSMISSION PROPOSAL

DOCUMENTATION FOR REVENUE

REQUIREMENT STUDY

TR-04-E-BPA-01A

January 2003

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CHAPTER 1

TRANSMISSION REVENUE REQUIREMENTS

I. Introduction

This chapter documents how Bonneville Power Administration's (BPA) annual transmission revenue requirements are determined. Two tables are presented showing both years of the rate period (FYs 2004 and 2005). On the first table, revenue requirements for FYs 2004 and 2005 are projected in an income statement format. The second table, a statement of annual cash flows, determines the minimum required net revenues and presents the annual cash flows available for risk mitigation.

II. Income Statement

A more detailed description of the following line items is presented in Chapter 4 of the Revenue Requirement Study (Study) (TR-04-E-BPA-01). Operating expenses (lines 1-5) include: BPA's transmission system operation, maintenance and development expenses, environmental remediation, facility leases, non-Federal transmission arrangements, transmission marketing and scheduling, transmission business line support services and overheads, and corporate overheads (line 2); inter-business lines expenses (primarily the generation inputs for ancillary services) (line 3), and annual straight-line depreciation (remaining life technique) for transmission and general plant-in-service (line 4).

Federal interest expense is calculated in transmission repayment studies on appropriations granted by Congress for BPA capital investments prior to the Transmission Systems Act (line 8) and on bonds that BPA issues to the U.S. Treasury (line 9). Amortization of capitalized bond premiums (line 11) is the annual amortization of call premiums resulting from early retirement of bonds that have been refinanced. The call premiums are capitalized and included in the principal of the replacement bonds. They are then amortized

over the term of the respective replacement bonds and constitute a non-cash component of interest expense. Bond interest is reduced by interest income from BPA's projected cash reserves (line 10). The capitalization adjustment and the Allowance for Funds Used During Construction (AFUDC) (lines 22-23) further reduce gross interest expense. The capitalization adjustment, a non-cash expense, is the annual recognition of the write-down in principal that resulted from the BPA Refinancing Act.

Planned net revenues (lines 16-18) are included to ensure coverage of planned amortization payments (minimum required net revenues) and to meet the Administrator's risk mitigation policy (planned net revenues for risk). *See* Chapter 8 of this volume and Section 2.2 of the Revenue Requirement Study TR-04-E-BPA-01.

III. Statement of Cash Flows

- ***Cash from Current Operations***: Minimum required net revenues (line 2) is the amount necessary to ensure that cash from operations is sufficient for planned amortization payments. It is the amount by which these planned payments to the U.S. Treasury exceed the expenses that do not require cash outlays (depreciation [line 4], amortization of capitalized bond premiums [line 5] and the capitalization adjustment [line 6]) and the revenues that do not provide cash in that year (accrual revenues from AC Intertie capacity ownership and fiber optic cable leases [line 7]).

- ***Cash Used for Capital Investments***: Investment in utility plant (line 11) is the increase in capital outlays associated with BPA investments for transmission, environment and general plant assets.

- ***Cash from Treasury Borrowing and Appropriations***: Increase in long-term debt (line 14) is the annual increment in bonds that BPA issues to Treasury to fund capital outlays

for transmission, environment and general plant assets. Repayment of long-term debt (line 15) is planned amortization of bonds issued to Treasury, as determined in transmission repayment studies. Repayment of capital appropriations (line 16) is planned amortization associated with pre-Transmission System Act appropriations, as determined in transmission repayment studies.

TABLE 1
TRANSMISSION REVENUE REQUIREMENT
INCOME STATEMENT
($thousands)

		A FY 2004	B FY 2005
1	OPERATING EXPENSES		
2	OPERATION AND MAINTENANCE	276,605	281,875
3	INTER-BUSINESS LINE EXPENSES	80,303	80,303
4	FEDERAL PROJECTS DEPRECIATION	176,455	188,386
5	TOTAL OPERATING EXPENSES	533,363	550,564
6	INTEREST EXPENSE		
7	INTEREST ON FEDERAL INVESTMENT -		
8	ON APPROPRIATED FUNDS	63,484	61,500
9	ON LONG-TERM DEBT	161,516	172,369
10	INTEREST INCOME	(23,105)	(23,100)
11	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,914	3,451
12	CAPITALIZATION ADJUSTMENT	(19,713)	(20,115)
13	AFUDC	(23,583)	(22,474)
14	NET INTEREST EXPENSE	162,513	171,631
15	TOTAL EXPENSES	695,876	722,195
16	MINIMUM REQUIRED NET REVENUES 1/	20,089	7,041
17	PLANNED NET REVENUES FOR RISK	0	0
18	TOTAL PLANNED NET REVENUES	20,089	7,041
19	**TOTAL REVENUE REQUIREMENT**	**715,965**	**729,236**

1/ SEE NOTE ON CASH FLOW TABLE.

TABLE 2
TRANSMISSION REVENUE REQUIREMENT
STATEMENT OF CASH FLOWS
($thousands)

		A FY 2004	B FY 2005
1	CASH FROM CURRENT OPERATIONS:		
2	MINIMUM REQUIRED NET REVENUES 1/	20,089	7,041
3	EXPENSES NOT REQUIRING CASH:		
4	FEDERAL PROJECTS DEPRECIATION	176,455	188,386
5	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,914	3,451
6	CAPITALIZATION ADJUSTMENT	(19,713)	(20,115)
7	ACCRUAL REVENUES (AC INTERTIE/FIBER)	(5,261)	(5,261)
8	CASH PROVIDED BY CURRENT OPERATIONS	175,484	173,502
9	CASH USED FOR CAPITAL INVESTMENTS:		
10	INVESTMENT IN:		
11	UTILITY PLANT	(340,035)	(289,706)
12	CASH USED FOR CAPITAL INVESTMENTS	(340,035)	(289,706)
13	CASH FROM TREASURY BORROWING AND APPROPRIATIONS:		
14	INCREASE IN LONG-TERM DEBT	320,035	269,706
15	REPAYMENT OF LONG-TERM DEBT	(126,897)	(153,500)
16	REPAYMENT OF CAPITAL APPROPRIATIONS	(28,587)	(2)
17	CASH FROM TREASURY BORROWING AND APPROPRIATIONS	164,551	116,204
18	ANNUAL INCREASE (DECREASE) IN CASH	0	0
19	PLANNED NET REVENUES FOR RISK	0	0
20	TOTAL ANNUAL INCREASE (DECREASE) IN CASH	0	0

1/ Line 18 must be greater than or equal to zero, otherwise net revenues will be added so that there are no negative cash flows for the year.

CHAPTER 2

TRANSMISSION EXPENSES

I. Introduction

This chapter compiles the expenses that are the basis for cost recovery in determination of transmission revenue requirements for the rate approval period.

II. Expenses

BPA used O&M expenses reflected in the final spending level process and decisions explained in Chapter 2 of the Study.

Inter-business line expenses, as determined in BPA's 2002 wholesale power rate case, are the generation inputs for ancillary services and the COE and BOR annual costs of network transmission and utility delivery facilities of those agencies. Also included, are costs associated with redispatch.

Depreciation expense, calculated using the straight-line method and remaining life technique is determined for lines, substations, and each of the FERC Accounts in the general plant category. *See* Chapter 3 - FCRTS Investment Base.

Interest expense is calculated in the transmission repayment study, using the capital appropriations and BPA revenue bonds issued to Treasury at individual interest rates.

***See* Chapter 4 - Projected Cash Balances / Interest Credit** for calculation of the interest credit on cash reserves.

TBL Operating Expenses
($thousands)

	Operating Expenses	**2004**	**2005**
2	Transmission G&A	17,481	17,918
3	Transmission Marketing and Scheduling	23,742	24,335
4	Transmission System Operations	37,455	38,391
5	Transmission System Maintenance	79,996	81,996
6	Transmission System Development	18,854	19,325
7	Transmission Support Services	17,634	18,075
8	TBL Services (reimbursables)		
9	Environment	4,495	4,607
10	Administrative & Support Services	61,498	63,978
11	Between Business Line Expenses	80,303	80,303
12	CSRS Pension Expense	15,450	13,250
13	Total System Operation & Maintenance	356,908	362,178
14	O&M only	276,605	281,875

FEDERAL COLUMBIA RIVER TRANSMISSION SYSTEM
CAPITAL-RELATED COSTS
SUMMARY OF TRANSMISSION CURRENT REPAYMENT STUDY DATA
($000)

	A 2002	B 2003	C 2004	D 2005
1 INTEREST EXPENSE (GROSS)				
2 BPA APPROPRIATIONS	66,903	65,279	63,484	61,499
3 TRANSMISSION LONG-TERM DEBT	136,182	145,421	162,196	173,048
4 REPAYMENT STUDY INTEREST INCOME	(8,229)	(8,760)	(9,376)	(9,370)
5 TOTAL INTEREST EXPENSE	194,856	201,940	216,304	225,177
6 PLANNED AMORTIZATION				
7 BPA APPROPRIATIONS	23,913	26,247	28,588	1
8 LONG-TERM DEBT	107,644	116,600	126,897	153,500
9 TOTAL AMORTIZATION	131,557	142,847	155,485	153,501

SUMMARY OF TRANSMISSION REVISED REPAYMENT STUDY DATA

10 INTEREST EXPENSE (GROSS)				
11 BPA APPROPRIATIONS	66,903	65,279	63,484	61,755
12 TRANSMISSION LONG-TERM DEBT	136,182	145,421	162,196	173,048
13 REPAYMENT STUDY INTEREST INCOME	(8,229)	(8,760)	(9,222)	(9,485)
14 TOTAL INTEREST EXPENSE	194,856	201,940	216,458	225,318
15 PLANNED AMORTIZATION				
16 BPA APPROPRIATIONS	23,913	26,247	25,088	3,503
17 LONG-TERM DEBT	107,644	116,600	126,897	153,500
18 TOTAL AMORTIZATION	131,557	142,847	151,985	157,003

SUMMARY OF DEPRECIATION EXPENSE

19 TRANSMISSION PLANT				
20 LINES	45,684	46,443	47,432	50,552
21 SUBSTATIONS	65,693	67,650	70,546	75,303
22 GENERAL PLANT	50,545	53,904	58,477	62,531
23 TOTAL DEPRECIATION	161,922	167,997	176,455	188,386

AFUDC
BPA Transmission Business Line
($ thousands)

		2001	2002	2003	2004	2005
1	capital expenditures		238,271	328,713	327,842	281,721
2	plant-in-service		175,741	160,885	224,821	478,847
3	SOY CWIP Balance 1/		187,500	263,372	447,609	574,213
4	EOY CWIP Balance	187,500	250,030	431,200	550,630	377,087
5	Average CWIP Balance		218,765	347,286	499,120	475,650
6	Interest Income Rate		6.30%	6.30%	6.30%	6.30%
7	AFUDC		10,337	16,409	23,583	22,474
	(Third Quarter Review)		13,342			

Note: PFIA are in CWIP but do not accrue AFUDC
They were omitted altogether to get more accurate AFUDC.

Amortization of Premiums on Construction Bond Refinancings

Date of Refinancing	Premium	Proration	No. of Months	Monthly Amortization	Type of Bond	Last Month to Amortize	Annual Amortiz
8/31/1992	$15,520,000	50%	180	$43,111.11	Construction	Aug-2007	517,333
10/31/1993	$8,440,000	100%	480	$17,583.33	Construction	Oct-2033	211,000
8/31/1997	$7,954,100	100%	120	$66,284.17	Construction	Aug-2007	795,410
4/30/1998	$4,998,330	100%	120	$41,652.75	Construction	Apr-2008	499,833
5/31/1998	$4,827,690	100%	132	$36,573.41	Construction	May-2009	438,881
5/31/1998	$2,556,947	100%	156	$16,390.69	Construction	May-2011	196,688
5/31/1998	$6,322,053	100%	408	$15,495.23	Construction	May-2032	185,943
8/31/1998	$4,684,950	100%	360	$13,013.75	Construction	Aug-2028	156,165
8/31/1998	$6,560,000	100%	360	$18,222.22	Construction	Aug-2028	218,667
1/31/2000	$3,500,000	99%	60	$57,866.67	Construction	Jan-2005	694,400
Total	$65,364,070			$326,193.32			3,914,320 thru 2004 3,451,387 in 2005

CHAPTER 3

FCRTS INVESTMENT BASE

I. Introduction

This chapter documents the development of the FCRTS investment for the rate approval period. In this proposal the investment data primarily serve as the source of depreciation calculations.

II. Methodology

The historical investment information is prepared from BPA's plant investment records. The general plant investment is identified according to different types of facilities (communications, supervisory control, buildings, etc.) by FERC Account. The historical plant investment data are from FY 2001.

Forecasted plant additions have been adjusted to take into account the investment associated with Delivery segment facilities projected to be sold prior to the rate approval period.

Depreciation is calculated using the straight-line method, remaining life technique. For general plant categories, annual depreciation rates are used unadjusted. For lines and substations, the annual rate has been weighted by the groups that compose these facilities, e.g., Substations is made up of land and land rights, structures and improvements, and station equipment. Both historical investment and forecasted additions are depreciated according to their group rate.

BONNEVILLE POWER ADMINISTRATION
TRANSMISSION DEPRECIATION
($ IN THOUSANDS)

		A 2001 PLANT INVEST	B 2002 PLANT INVEST	C 2002 DEPREC EXPEN	D 2003 PLANT INVEST	E 2003 DEPREC EXPEN	F 2004 PLANT INVEST	G 2004 DEPREC EXPEN	H 2005 PLANT INVEST	I 2005 DEPREC EXPEN
1	LINES:									
2	GENER-INTEGRATION	16,466	16,731	378	17,000	385	17,185	390	17,298	393
3	NETWORK	1,675,650	1,703,364	38,521	1,733,082	39,175	1,782,305	40,075	2,001,970	43,141
4	SOUTHERN INTERTIE	197,153	199,553	4,522	201,902	4,577	203,527	4,622	204,518	4,652
5	EASTERN INERTIE	98,249	98,910	2,248	99,583	2,263	100,047	2,276	100,329	2,284
6	UTILITY DELIVERY	31	574	7	1,084	19	1,438	29	1,657	35
7	DSI DELIVERY	0	724	8	1,404	24	1,904	38	2,197	47
8	PLANT LEASED	0	0	0	0	0	0	2	0	0
9	TOTAL LINES	1,987,549	2,019,856	45,684	2,054,055	46,443	2,106,406	47,432	2,327,969	50,552
10	SUBSTATIONS:									
11	GENER-INTEGRATION	46,330	47,302	1,442	47,966	1,467	48,545	1,486	49,001	1,502
12	NETWORK	1,420,881	1,493,649	44,884	1,560,959	47,041	1,666,529	49,703	1,804,537	53,454
13	SOUTHERN INTERTIE	464,386	468,440	14,366	472,302	14,487	475,839	14,601	530,959	15,505
14	EASTERN INERTIE	23,866	24,289	742	24,769	755	25,157	769	25,474	780
15	UTILITY DELIVERY	66,496	49,129	1,781	50,209	1,530	51,625	1,568	52,373	1,602
16	DSI DELIVERY	84,685	76,240	2,478	77,680	2,370	79,385	2,419	80,382	2,460
17	PLANT LEASED	0	0	0	0	0	0	0	0	0
18	TOTAL SUBSTATIONS	2,106,644	2,159,049	65,693	2,233,885	67,650	2,347,080	70,546	2,542,726	75,303

BONNEVILLE POWER ADMINISTRATION
PROJECTED TRANSMISSION PLANT INVESTMENT
($ IN THOUSANDS)

	A	B	C	D	E	F	G	H	I
	TOTAL 2001 INVEST	2002 ADDITIONS	TOTAL 2002 INVEST	2003 ADDITIONS	TOTAL 2003 INVEST	2004 ADDITIONS	TOTAL 2004 INVEST	2005 ADDITIONS	TOTAL 2005 INVEST
1 GENER-INTEGRATION	62,796	1,237	64,033	933	64,966	764	65,730	569	66,299
2 NETWORK	3,096,531	100,482	3,197,013	97,028	3,294,041	154,793	3,448,834	357,673	3,806,507
3 SOUTHERN INTERTIE	661,539	6,454	667,993	6,211	674,204	5,162	679,366	56,111	735,477
4 EASTERN INERTIE	122,115	1,084	123,199	1,153	124,352	852	125,204	599	125,803
5 UTILITY DELIVERY	66,527	(16,824)	49,703	1,590	51,293	1,770	53,063	967	54,030
6 DSI DELIVERY	84,685	(7,721)	76,964	2,120	79,084	2,205	81,289	1,290	82,579
7 PLANT HELD	3,245	0	3,245	0	3,245	0	3,245	0	3,245
8 PLANT LEASED		0	0	0	0	0	0	0	0
9 GENERAL PLANT	742,661	63,418	806,079	53,171	859,250	73,406	932,656	63,134	995,790
10 TOTAL BPA	4,840,099	148,130	4,988,229	162,206	5,150,435	238,952	5,389,387	480,343	5,869,730

BONNEVILLE POWER ADMINISTRATION
PLANT INVESTMENT ADDITIONS
($ IN THOUSANDS)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	LINES	SUBS	GEN PLANT	TOTAL 2002 ADDITIONS	LINES	SUBS	GEN PLANT	TOTAL 2003 ADDITIONS	LINES	SUBS	GEN PLANT	TOTAL 2004 ADDITIONS	LINES	SUBS
1 GENER-INTEGRATION	265	972		1,237	269	664		933	185	579		764	113	456
2 NETWORK	27,714	72,768		100,482	29,718	67,310		97,028	49,223	105,570		154,793	219,665	138,008
3 SOUTHERN INTERTIE	2,400	4,054		6,454	2,349	3,862		6,211	1,625	3,537		5,162	991	55,120
4 EASTERN INERTIE	661	423		1,084	673	480		1,153	464	388		852	282	317
5 UTILITY DELIVERY	543	(17,367)		(16,824)	510	1,080		1,590	354	1,416		1,770	219	748
6 DSI DELIVERY	724	(8,445)		(7,721)	680	1,440		2,120	500	1,705		2,205	293	997
7 PLANT HELD				0				0				0		
8 PLANT LEASED				0				0				0		
9 GENERAL PLANT			63,418	63,418			53,171	53,171			73,406	73,406		
10 TOTAL BPA	32,307	52,405	63,418	148,130	34,199	74,836	53,171	162,206	52,351	113,195	73,406	238,952	221,563	195,646

SEGMENTED BPA PLANT INVESTMENT 9/30/01
AND ACCUMULATED DEPRECIATION ALLOCATION
($ IN THOUSANDS)

	A	B	C	E	F	G	H	I	J	K	L
	GENER INTEG	NETWORK	SOUTH INTER	EAST INTER	UTIL DELIV	DSI	MTRNG AND GN PLNT 1/	PLANT LEASED	EMRGCY SPRS & PT SBS	OTHR PLNT	TOTAL 9.30.01
1. SUBSTATIONS	43,443	1,332,351	462,813	23,866	62,353	79,409	64,059	4	107,759		2,176,057
2. METERING STATIONS							16,461				16,461
3. SUB TOTAL	43,443	1,332,351	462,813	23,866	62,353	79,409	80,520	4	107,759		2,192,518
4. EMRGNCY SPARES & PORT SUBS 2/	2,887	88,530	1,573	0	4,143	5,276	5,350		(107,759)		0
5. TOTAL SUBSTATIONS	46,330	1,420,881	464,386	23,866	66,496	84,685	85,870	4			2,192,518
6. ACCUMULATED DEPRECIATION	(17,176)	(526,774)	(121,242)	(7,124)	(24,653)	(31,396)	(31,835)	(4)			(760,200)
7. NET SUBSTATIONS	29,154	894,107	343,144	16,742	41,843	53,289	54,035				1,432,314
8. LINES (INCL LEASD/OTHERS)	16,466	1,675,650	197,153	98,249	31	0		185			1,987,734
9. ACCUMULATED DEPRECIATION	(7,720)	(785,660)	(92,038)	(50,303)	(15)	0		(185)			(935,921)
10. NET LINES	8,746	889,990	105,115	47,946	16	0		0			1,051,813
11. GENERAL PLANT							656,602				656,602
12. ACCUMULATED DEPRECIATION							(206,304)				(206,304)
13. NET GENERAL PLANT							239,268				239,268
14. OTHER PHYSICAL PLANT (LAND) 3/										39	39
15. PLANT FOR FUTURE USE (LAND)										3,245	3,245
16. TOTAL COMPLETED PLANT	62,796	3,096,531	661,539	122,115	66,527	84,685	742,472	189	0	3,284	4,840,138
17. TOTAL BPA COMPLETED PLANT 4/	62,796	3,096,531	661,539	122,115	66,527	84,685	742,472	189		3,245	4,840,099
18. ACCUMULATED DEPRECIATION	(24,896)	(1,312,434)	(213,280)	(57,427)	(24,668)	(31,396)	(238,139)	(189)		0	(1,902,429)
19. NET COMPLETED PLANT	37,900	1,784,097	448,259	64,688	41,859	53,289	504,333	0		3,245	2,937,670

1/ LINE 1 INCLUDES POWER SYSTEM CONTROL EQUIPMENT.
2/ ALLOCATED TO SEGMENTS BY SUBSTATION INVESTMENT.
3/ NON-DEPRECIABLE LAND.
4/ DOES NOT INCLUDE NON-DEPRECIABLE LAND.

BPA TRANSMISSION GENERAL PLANT
PROJECTED PLANT ADDITIONS
($THOUSANDS)

		FERC ACCT	FY 2002 ADDTNS	FY 2003 ADDTNS	FY 2004 ADDTNS	FY 2005 ADDTNS
1	**LAND & LAND RIGHTS**	389	0	0	0	0
2	**STRUCTURES & IMPROVEMENTS**	390	6,312	9,127	8,532	8,782
3	**OFFICE FURNITURE & FIXTURES**	391.1	0	0	0	0
4	**DATA PROCESSING -EQUIPMENT**	391.2	1,108	1,157	1,236	1,273
5	**DATA PROCESSING -SOFTWARE**	391.3				
6	**TRANSPORT EQUIPMENT**	392.1	1,356	1,068	1,016	947
7	**HELICOPTERS**	392.2	908	716	682	636
8	**AIRPLANES**	392.3	908	716	682	636
9	**STORES EQUIPMENT**	393	1,356	1,068	1,016	947
10	**TOOLS, SHOP & GARAGE EQUIPMENT**	394	908	716	682	636
11	**LAB EQUIPMENT**	395	1,816	1,433	1,364	1,272
12	**TEST FACILITIES**	395.1	0	0	0	0
13	**POWER OPERATED EQUIPMENT**	396	1,816	1,433	1,364	1,272
14	**COMMUNICATIONS EQUIPMENT**	397	19,927	11,946	31,872	18,579
15	**MISC EQUIPMENT**	398	0	0	0	0
16	**SUBTOTAL GENERAL PLANT**		36,415	29,380	48,446	34,980
17	**STATION EQUIPMENT**	353	27,003	23,791	24,960	28,154
18	**TOTAL GENERAL PLANT**		63,418	53,171	73,406	63,134
	tbl only excludes #391			53,564	73,872	63,576
			55,069	43,503	69,110	58,838

BPA GENERAL PLANT
CUMULATIVE PLANT INVESTMENT
($THOUSANDS)

		FERC ACCT	FY 2001 TOTAL	2002 TOTAL	2003 TOTAL	2004 TOTAL	2005 TOTAL
1	**LAND & LAND RIGHTS**	389	6,966	7,294	7,294	7,294	7,294
2	**STRUCTURES & IMPROVEMENTS**	390	129,465	125,509	134,636	143,168	151,950
3	**OFFICE FURNITURE & FIXTURES**	391.1	1,120	1,291	1,291	1,291	1,291
4	**DATA PROCESSING -EQUIPMENT**	391.2	1,775	27,255	28,412	29,648	30,921
5	**DATA PROCESSING -SOFTWARE**	391.3	35,026	23,812	23,812	23,812	23,812
6	**TRANSPORT EQUIPMENT**	392.1	17,229	16,379	17,447	18,463	19,410
7	**HELICOPTERS**	392.2	4,846	4,659	5,375	6,057	6,693
8	**AIRPLANES**	392.3	4,685	3,665	4,381	5,063	5,699
9	**STORES EQUIPMENT**	393	1,914	2,043	3,111	4,127	5,074
10	**TOOLS, SHOP & GARAGE EQUIPMENT**	394	5,837	5,740	6,456	7,138	7,774
11	**LAB EQUIPMENT**	395	37,073	43,613	45,046	46,410	47,682
12	**TEST FACILITIES**	395.1		3,512	3,512	3,512	3,512
13	**POWER OPERATED EQUIPMENT**	396	19,422	18,928	20,361	21,725	22,997
14	**COMMUNICATIONS EQUIPMENT**	397	390,658	434,329	446,275	478,147	496,726
15	**MISC EQUIPMENT**	398	597	4	4	4	4
16	**SUBTOTAL GENERAL PLANT**		656,613	718,033	747,413	795,859	830,839
17	**STATION EQUIPMENT**	353	85,874	107,830	131,621	156,581	184,735
18	**TOTAL GENERAL PLANT**		742,487	825,863	879,034	952,440	1,015,574

BPA GENERAL PLANT
DEPRECIATION EXPENSE
($THOUSANDS)

		FERC ACCT	FY 2002 TOTAL	FY 2003 TOTAL	FY 2004 TOTAL	FY 2005 TOTAL
1	**LAND & LAND RIGHTS**	389	98	98	98	98
2	**STRUCTURES & IMPROVEMENTS**	390	2,222	2,383	2,534	2,690
3	**OFFICE FURNITURE & FIXTURES**	391.1	67	67	67	67
4	**DATA PROCESSING -EQUIPMENT**	391.2	3,829	3,992	4,166	4,344
5	**DATA PROCESSING -SOFTWARE**	391.3	4,236	4,236	4,236	4,236
6	**TRANSPORT EQUIPMENT**	392.1	1,895	2,019	2,136	2,246
7	**HELICOPTERS**	392.2	157	181	204	225
8	**AIRPLANES**	392.3	123	147	170	191
9	**STORES EQUIPMENT**	393	73	111	147	181
10	**TOOLS, SHOP & GARAGE EQUIPMENT**	394	232	261	288	314
11	**LAB EQUIPMENT**	395	2,591	2,676	2,757	2,832
12	**TEST FACILITIES**	395.1	60	60	60	60
13	**POWER OPERATED EQUIPMENT**	396	1,308	1,407	1,501	1,589
14	**COMMUNICATIONS EQUIPMENT**	397	24,932	25,617	27,445	28,513
15	**MISC EQUIPMENT**	398	0	0	0	0
16	**SUBTOTAL GENERAL PLANT**		41,823	43,255	45,809	47,586
17	**STATION EQUIPMENT**	353	8,722	10,649	12,668	14,945
18	**TOTAL GENERAL PLANT**		50,545	53,904	58,477	62,531

CHAPTER 4

PROJECTED CASH BALANCES/INTEREST CREDITS

I. Introduction

This chapter projects BPA-TBL cash balances for the rate period and estimates the interest income (credits) to be earned on of BPA's projected cash balances and on annual funds to be returned to Treasury. Included in BPA-TBL's projected cash balances are proceeds from the sale of Delivery segment facilities projected to be sold prior to the 2004-2005 rate period.

II. Interest credits on BPA's projected cash balances

The beginning rate period cash balance was derived from BPA's separate accounting analysis for FY 2001 and from current TBL forecasts of revenues, expenses and cash flows for FYs 2002 and 2003. The annual incremental cash provided from forecasted net revenues are added to this, for both revenue requirements and the revised revenue test. Using projected interest earnings rates, annual interest income is calculated from projected average annual cash balances. The resulting interest income is applied as a credit against interest expense in the transmission revenue requirements and in the income statement of the revised revenue test.

III. Interest income (repayment program calculation)

Separately, interest income rates listed in this chapter are calculated and used within the repayment program to calculate an interest credit based on the average cash necessary to pay the interest, bond call premiums, and amortization payments calculated by the study for return to Treasury in that year. The repayment program assumes the cash accumulates at a uniform rate throughout the year, except for interest paid on bonds issued to Treasury at mid-year. At the end of the year, the cash balance, together with the interest credit earned

thereon, is used in the program for payment of interest expense, amortization of the Federal investment, and payment of bond premiums. For a further explanation of the calculation of the interest credit computed within repayment studies, *see* Revenue Requirement Study (TR-04-E-BPA-01), Appendix A - The Repayment Program.

IV. Proceeds from projected sales of Delivery facilities

BPA-TBL has compiled a list of Delivery facilities expected to be sold prior to the 2004-2005 rate period. Book value was calculated for the Delivery facilities and BPA-TBL staff estimated the sales proceeds. The total book value was included in the beginning cash balance for the rate period to provide an interest credit comparable to the reduction in interest expense that would occur from retirement of an equivalent amount of transmission debt. This portion of the projected sales proceeds was not available for the risk analysis to use in determining Treasury payment probability.

Interest Income from Projected Cash Balances
BPA Transmission Business Line
($ thousands)

		2004	2005
1	Annual Cash Surplus/(Deficit)	-	-
2	Adjustments to Cash		
3	SOY Cash Balance 1/	230,543	230,543
4	EOY Cash Balance	230,543	230,543
5	Average Cash Balance	230,543	230,543
6	Interest Income Rate	5.96%	5.96%
7	Annual Interest Income *	23,105	23,100
	* includes from repayment study	9,365	9,360

1/ Includes:

Ending FY 2001 Cash Balance	79,227	SAA results proration
FY 2002 change in cash	114,331	actuals
FY 2003 change in cash	36,985	11/07/02

Interest Income from Projected Cash Balances
Revenues from Proposed Rates
BPA Transmission Business Line
($ thousands)

		2004	2005
1	Annual Cash Surplus/(Deficit)	(13,013)	(12,144)
2	Adjustments to Cash		
3	SOY Cash Balance	230,543	230,883
4	EOY Cash Balance	217,530	218,739
5	Average Cash Balance	224,037	224,811
6	Interest Income Rate	5.96%	5.96%
7	Annual Interest Income *	22,575	22,884
	* includes from repayment study	9,222	9,485

Interest Income from Projected Cash Balances
Revenues from Current Rates
BPA Transmission Business Line
($ thousands)

		2004	2005
1	Annual Cash Surplus/(Deficit)	(36,034)	(28,868)
2	Adjustments to Cash		
3	SOY Cash Balance	230,543	207,176
4	EOY Cash Balance	194,509	178,308
5	Average Cash Balance	212,526	192,742
6	Interest Income Rate	5.96%	5.96%
7	Annual Interest Income *	22,043	20,857
	* includes from repayment study	9,376	9,370

Forecasted Delivery Facilities Sold
Sales Prior to Rate Period
($000s)

Substation	Customer	Proceeds	Book Value
Baxter	Big Bend	$ 70,000	$ 70,000
Burnt Woods	Consumers Power Inc.	$ 228,000	$ 203,000
Cheney	City of Cheney / Inland	$ 386,543	$ 386,543
Clinton	Missoula Electric Coop	$ 77,000	$ 77,000
Corvallis	Ravalli	$ 357,000	$ 349,000
Delight	Big Bend	$ 162,000	$ 162,000
East Hills	South Side Electric	$ 99,000	$ 84,000
Eltopia	Big Bend	$ 397,000	$ 515,000
Four Lakes	City of Cheney / Inland	$ 558,706	$ 558,706
Frenchtown	Missoula Electric Coop	$ 309,000	$ 309,000
Froman	Consumers Power Inc.	$ 120,000	$ 100,000
Grantsdale	Ravalli	$ 49,000	$ 33,000
Harrisburg	Consumers Power Inc.	$ 210,000	$ 113,000
Hatton	Big Bend	$ 421,000	$ 421,000
Huson	Missoula Electric Coop	$ 64,000	$ 64,000
Mesa	Big Bend	$ 194,000	$ 194,000
Newcomb	South Side Electric	$ 173,000	$ 182,000
North Butte	Consumers Power Inc.	$ 125,000	$ 101,000
Pendleton	Umatilla Electric	$ 1	$ 13,339
Ralston	Big Bend	$ 238,000	$ 338,000
Ritzville	Big Bend	$ 205,000	$ 205,000
Roes Corner	Rupert/East End/Riverside/United	$ 950,000	$ 1,662,000
Scarcello	Kootenai	$ 187,500	$ 814,000
Schrag	Big Bend	$ 313,000	$ 313,000
Stevensville	Ravalli	$ 167,000	$ 146,000
Tarkio	Missoula Electric Coop	$ 168,000	$ 168,000
Victor	Ravalli	$ 30,000	$ 22,000
	Sales by 9/30/03	**$6,258,750**	**$ 7,603,588**

CHAPTER 5

INTEREST RATES FOR TREASURY SOURCES OF CAPITAL AND PRICE DEFLATORS

Introduction

Interest rates on bonds issued by BPA to Treasury are used in development of repayment studies and projections of Federal interest expense in revenue requirements. Price deflators are used for developing spending levels in revenue requirements.

WEFA

The WEFA Group (WEFA) provides Treasury yield curve forecasts that BPA uses to project interest rates on bonds issued to Treasury. WEFA is also the source of price deflators that BPA treats as escalators for purposes of developing spending levels. The price deflators are derived from projections of Gross Domestic Product (GDP). The GDP consists of the sum of consumption, investment, government purchases and net exports, excluding transfers to foreigners.

Interest Rate Projections

Projected interest rates for BPA bonds issued to Treasury are based on WEFA's yield curve projections of Treasury market rates, plus a markup of 32 to 90 basis points depending on the length of time to maturity. The markup estimate reflects an interagency agreement that Treasury price BPA bonds at a level comparable to securities (bonds) issued by U.S. government corporations. The markup estimate reflects the average basis point markup on recent intermediate and long-term bonds issued by BPA. As noted in the attached transmittal memo documenting the interest rates in this revenue requirement study, for the FY 2004-2005 period the 30-year rate reflects a markup of 90 basis points.

Deflators

The current and cumulative price deflator used to escalate midyear dollars are derived from the fiscal and calendar year price deflators provided by WEFA. They are calculated as follows:

$$[(FY_1/100) \times 0\ 5] + 1 = \text{Cumulative Price Deflator}_1$$

The fiscal year GDP price deflator for the current year is divided by one hundred and multiplied by one half. The result, when added to one, yields the cumulative price deflator for the first year.

$$[1 + (FY_t/100)] \times \text{Cumulative Price Deflator}_{t-1} = \text{Cumulative Price Deflator}_t, \text{ when } t > 1$$

The fiscal year GDP price deflator for a future year is divided by one hundred and added to one. The result, when multiplied by the cumulative price deflator from the previous year, yields the cumulative price deflator for the each successive year.

To the extent deflators are used in developing the FY 2004-2005 spending levels they are based on the price deflators from the Second Quarter 2002 WEFA forecast.

BPA F 1325.05e

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(Previously BPA 303)

BONNEVILLE POWER ADMINISTRATION

InterOffice Memo

Date: August 9, 2002

To: See Attached

From: Robert Mealey, Financial Economist - CMD
Claudia Andrews, Corporate Risk Manager - C

Subject: FY 2002. Q3 Price Deflator and BPA Long-Term Borrowing Rate Projections

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Attached are updated Third Quarter FY 2002 price deflator and BPA borrowing rate projections for the period 1997 to 2019. These projections are based on The WEFA Group's (WEFA) CY 2002 Second Quarter Long-Term Economic Outlook.

Table 1 contains updated projections for BPA's long-term Treasury borrowing rates. WEFA projections of 30-year U.S. Government bond rates are shown in Column A. Column B provides these projections for fiscal years. Column C summarizes BPA Treasury borrowing rates for fiscal years. BPA's borrowing rate projections include a 90 basis point markup over the 30 year T-bond rate. The markup is an average value taken from recently issued long-term Treasury bonds and BPA Treasury analyst adjustments. Table 2 compares BPA's FY 2002.Q3 borrowing rate forecast with its FY 1998.Q3 forecast. Tables 3 and 4 provide borrowing rate projections for

15 and 20-year U.S. Treasury rates. Table 5 summarizes projections of BPA's borrowing rate over the entire Treasury yield curve.

The Gross Domestic Product (GDP) price deflator is an important measure of inflation. GDP deflator forecasts are shown in Table 6. Column A summarizes the relative growth in the GDP price deflator over the forecast period. The GDP deflator forecast in BPA fiscal years is shown in Column B. Column C lists the cumulative price deflator index by fiscal year. This index assumes 1992 as the base year and is adjusted to express fiscal year dollar values as mid-year dollar values. GDP may be viewed as the goods and services produced by both domestic and foreign capital and labor within the United States. Major components of GDP include: total consumption, investment, government purchases, and net exports. The government's method for calculating GDP changed in 1996. Instead of fixed weights the new measure of GDP is based on a chain-weighted methodology. This means real GDP calculations will reflect not just the changing mix of the components in GDP, but also the relative price changes in these components. Table 7 compares the FY 2002.Q3 Quarter Inflation Forecast with BPA's FY 1998.Q3 forecast.

Please forward to the appropriate people in your group. Your assistance in identifying addressees for future forecasts is appreciated. If you have any questions, give me a call at (503) 230-5389.

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30 YEAR TREASURY YIELDS
FY 2002.Q3 FORECAST OF BPA TREASURY BORROWING RATES

Calendar/Fiscal Years 1997 - 2019

	(A)	(B)	(C)
YEAR	BOND RATE 1/ Calendar Year	BOND RATE Fiscal Year	BPA RATE Fiscal Year
1997	6.60%	6.63%	7.53%
1998	5.76%	5.97%	6.87%
1999	6.14%	6.05%	6.95%
2000	6.17%	6.16%	7.06%
2001	5.84%	5.93%	6.83%
2002	5.94%	5.92%	6.82%
2003	6.10%	6.06%	6.96%
2004	6.14%	6.13%	7.03%
2005	6.06%	6.08%	6.98%
2006	6.05%	6.05%	6.95%
2007	6.03%	6.04%	6.94%
2008	6.02%	6.02%	6.92%
2009	6.01%	6.01%	6.91%
2010	6.01%	6.01%	6.91%
2011	6.03%	6.02%	6.92%
2012	6.10%	6.08%	6.98%
2013	6.20%	6.17%	7.07%
2014	6.32%	6.29%	7.19%
2015	6.38%	6.37%	7.27%
2016	6.50%	6.47%	7.37%
2017	6.60%	6.57%	7.47%
2018	6.72%	6.69%	7.59%
2019	6.78%	6.77%	7.67%

1/ Mid-Point Interest Rate Forecast. DRIWEFA CY 2002.Q3 & WEFA CY 1998.Q3 outlook. DRI-WEFA, The U.S. Economy: The 25-Year Focus, Spring Issue, 2002,

30 YEAR TREASURY YIELDS
FY 2002.Q3 COMPARISON OF BPA BORROWING RATE FORECASTS

Fiscal Years 1997 - 2019

	(A)	(B)	(C)
	FY 2002.Q3 FORECAST	FY 1998.Q3 FORECAST	DIFFERENCE
YEAR	BPA RATE 1/	BPA RATE	(A-B)
1997	7.53%	7.53%	0.00%
1998	6.87%	7.00%	-0.13%
1999	6.95%	7.21%	-0.26%
2000	7.06%	7.30%	-0.24%
2001	6.83%	7.15%	-0.32%
2002	6.82%	7.05%	-0.24%
2003	6.96%	6.92%	0.04%
2004	7.03%	6.88%	0.15%
2005	6.98%	6.85%	0.13%
2006	6.95%	6.81%	0.14%
2007	6.94%	6.77%	0.16%
2008	6.92%	6.74%	0.19%
2009	6.91%	6.70%	0.21%
2010	6.91%	6.66%	0.25%
2011	6.92%	6.65%	0.28%
2012	6.98%	6.65%	0.33%
2013	7.07%	6.64%	0.43%
2014	7.19%	6.64%	0.55%
2015	7.27%	6.64%	0.63%
2016	7.37%	6.64%	0.74%
2017	7.47%	6.64%	0.84%
2018	7.59%	6.63%	0.96%
2019	7.67%	6.63%	1.03%

1/ Mid-Point Interest Rate Forecast. DRIWEFA CY 2002.Q3 & WEFA CY 1998.Q3 outlook, DRI-WEFA, The U.S. Economy: The 25-Year Focus, Spring Issue, 2002.

15 YEAR TREASURY YIELDS
FY 2002.Q3 FORECAST OF BPA TREASURY BORROWING RATES

Calendar/Fiscal Years 1997 - 2019

	(A)	(B)	(C)
YEAR	BOND RATE 1/ Calendar Year	BOND RATE Fiscal Year	BPA RATE Fiscal Year
1997	6.41%	6.44%	7.13%
1998	5.57%	5.78%	6.47%
1999	5.94%	5.84%	6.53%
2000	6.07%	6.04%	6.73%
2001	5.54%	5.67%	6.36%
2002	5.68%	5.64%	6.33%
2003	5.88%	5.83%	6.52%
2004	5.93%	5.92%	6.60%
2005	5.83%	5.86%	6.54%
2006	5.83%	5.83%	6.52%
2007	5.82%	5.82%	6.51%
2008	5.81%	5.81%	6.50%
2009	5.81%	5.81%	6.50%
2010	5.81%	5.81%	6.50%
2011	5.83%	5.82%	6.51%
2012	5.90%	5.88%	6.57%
2013	6.01%	5.98%	6.67%
2014	6.14%	6.10%	6.79%
2015	6.20%	6.19%	6.87%
2016	6.33%	6.30%	6.98%
2017	6.43%	6.40%	7.09%
2018	6.56%	6.53%	7.21%
2019	6.61%	6.60%	7.29%

1/ Mid-Point Interest Rate Forecast. DRIWEFA CY 2002.Q3 & WEFA CY 1998.Q3 outlook. DRI-WEFA, The U.S. Economy: The 25-Year Focus, Spring Issue, 2002,

20 YEAR TREASURY YIELDS
FY 2002.Q3 FORECAST OF BPA TREASURY BORROWING RATES

Calendar/Fiscal Years 1997 - 2019

	(A)	(B)	(C)
YEAR	BOND RATE 1/ Calendar Year	BOND RATE Fiscal Year	BPA RATE Fiscal Year
1997	6.48%	6.50%	7.32%
1998	5.63%	5.84%	6.66%
1999	6.01%	5.91%	6.73%
2000	6.10%	6.08%	6.90%
2001	5.64%	5.76%	6.58%
2002	5.76%	5.73%	6.55%
2003	5.96%	5.91%	6.73%
2004	6.00%	5.99%	6.81%
2005	5.91%	5.93%	6.75%
2006	5.90%	5.90%	6.72%
2007	5.89%	5.89%	6.71%
2008	5.88%	5.88%	6.70%
2009	5.87%	5.87%	6.69%
2010	5.88%	5.87%	6.69%
2011	5.90%	5.89%	6.71%
2012	5.97%	5.95%	6.77%
2013	6.07%	6.04%	6.86%
2014	6.20%	6.17%	6.99%
2015	6.26%	6.25%	7.07%
2016	6.39%	6.36%	7.18%
2017	6.49%	6.46%	7.28%
2018	6.61%	6.58%	7.40%
2019	6.67%	6.65%	7.47%

1/ Mid-Point Interest Rate Forecast. DRIWEFA CY 2002.Q3 & WEFA CY 1998.Q3 outlook. DRI-WEFA, The U.S. Economy: The 25-Year Focus, Spring Issue, 2002,

FY 2002.Q3 INFLATION FORECAST COMPARISONS

GROSS DOMESTIC PRODUCT PRICE DEFLATOR INDEXES

BPA Fiscal Year

YEAR	(A) FY 02.Q3 1/ CUMULATIVE PRICE DEFLATOR INDEX (Base Year 2002)	(B) FY 98.Q3 2/ CUMULATIVE PRICE DEFLATOR INDEX (Base Year 2002)	(C) (A - B) DIFFERENCE
2002	1.010	1.013	-0.003
2003	1.034	1.041	-0.006
2004	1.060	1.067	-0.008
2005	1.086	1.094	-0.009
2006	1.112	1.122	-0.011
2007	1.139	1.152	-0.013
2008	1.167	1.182	-0.015
2009	1.195	1.213	-0.018
2010	1.225	1.245	-0.020
2011	1.256	1.278	-0.022
2012	1.289	1.311	-0.022
2013	1.324	1.346	-0.022
2014	1.361	1.382	-0.021
2015	1.399	1.418	-0.019
2016	1.438	1.455	-0.017
2017	1.480	1.494	-0.014
2018	1.523	1.533	-0.010
2019	1.568	1.574	-0.005

1/ Mid-Point Interest Rate Forecast. DRIWEFA CY 2002.Q3 & WEFA CY 1998.Q3 outlook
DRI-WEFA, The U.S. Economy: The 25-Year Focus, Spring Issue, 2002, Trend Scenario

Table 5

2002.Q3 BPA TREASURY BORROWING RATE YIELD CURVE FORECAST 1/

FORECAST PREPARED September 16, 2002

Fiscal Years 1997 - 2019

MATURITY

2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	11 Year	12 Year	13 Year	14 Year	15 Year
6.18	6.45	6.54	6.64	6.72	6.81	6.85	6.89	6.93	6.97	7.01	7.05	7.09	7.13
5.80	5.93	5.98	6.03	6.11	6.19	6.22	6.24	6.27	6.31	6.35	6.39	6.43	6.47
5.89	6.01	6.06	6.10	6.20	6.29	6.30	6.32	6.33	6.37	6.41	6.45	6.49	6.53
6.28	6.36	6.38	6.41	6.47	6.54	6.55	6.55	6.56	6.59	6.62	6.66	6.69	6.73
5.37	5.55	5.67	5.79	5.90	6.01	6.06	6.10	6.15	6.19	6.23	6.27	6.32	6.36
4.88	5.25	5.43	5.61	5.75	5.90	5.97	6.04	6.11	6.15	6.20	6.24	6.29	6.33
5.37	5.69	5.81	5.92	6.03	6.15	6.20	6.26	6.31	6.35	6.39	6.44	6.48	6.52
5.82	5.97	6.05	6.12	6.20	6.29	6.33	6.36	6.40	6.44	6.48	6.52	6.56	6.60
5.82	5.93	6.00	6.07	6.15	6.24	6.27	6.31	6.34	6.38	6.42	6.46	6.50	6.54
5.77	5.87	5.95	6.03	6.12	6.20	6.24	6.28	6.31	6.35	6.39	6.44	6.48	6.52
5.75	5.86	5.94	6.02	6.11	6.20	6.23	6.27	6.31	6.35	6.39	6.43	6.47	6.51
5.75	5.85	5.93	6.01	6.10	6.19	6.23	6.26	6.30	6.34	6.38	6.42	6.46	6.50
5.73	5.84	5.92	6.00	6.09	6.18	6.22	6.26	6.30	6.34	6.38	6.42	6.46	6.50
5.72	5.83	5.91	5.99	6.09	6.18	6.22	6.26	6.30	6.34	6.38	6.42	6.46	6.50
5.72	5.83	5.91	6.00	6.10	6.19	6.23	6.27	6.32	6.36	6.39	6.43	6.47	6.51
5.76	5.88	5.97	6.06	6.16	6.25	6.29	6.34	6.38	6.42	6.46	6.49	6.53	6.57
5.83	5.96	6.06	6.15	6.25	6.35	6.39	6.43	6.47	6.51	6.55	6.59	6.63	6.67
5.96	6.09	6.19	6.28	6.38	6.47	6.52	6.56	6.60	6.64	6.68	6.72	6.75	6.79
6.03	6.17	6.26	6.36	6.46	6.56	6.60	6.64	6.68	6.72	6.76	6.80	6.84	6.87
6.14	6.28	6.38	6.48	6.57	6.67	6.71	6.75	6.79	6.83	6.87	6.91	6.95	6.98
6.24	6.38	6.48	6.58	6.68	6.77	6.82	6.86	6.90	6.94	6.98	7.02	7.05	7.09
6.36	6.50	6.61	6.71	6.80	6.90	6.94	6.98	7.03	7.06	7.10	7.14	7.18	7.21
6.41	6.56	6.67	6.78	6.87	6.97	7.01	7.06	7.10	7.14	7.17	7.21	7.25	7.29

: Rate Forecast. DRIWEFA CY 2002.Q3 & WEFA CY 1998.Q3 outlook. DRI-WEFA, The U.S. Economy: The 25-Year Focus, Spring Issue, 2002,

TABLE 6

FY 2002.Q3 FORECAST OF INFLATIONARY TRENDS
CHANGE IN GROSS DOMESTIC PRODUCT PRICE DEFLATOR
Index 1996 = 100
Calendar/Fiscal Year

	(A)	(B)	(C)	(D)	(E)	(F)	(G)
YEAR	2002.Q2 CALENDAR YEAR % CHANGE 1/	FY 02.Q3 FISCAL YEAR % CHANGE	FISCAL YEAR CUMULATIVE PRICE DEFLATOR INDEX (1998 Base Year)	FISCAL YEAR CUMULATIVE PRICE DEFLATOR INDEX (1999 Base Year)	FISCAL YEAR CUMULATIVE PRICE DEFLATOR INDEX (2000 Base Year)	FISCAL YEAR CUMULATIVE PRICE DEFLATOR INDEX (2001 Base Year)	FISCAL YEAR CUMULATIVE PRICE DEFLATOR INDEX (2002 Base Year) 2/
2002	1.95%	2.01%	1.086	1.071	1.053	1.031	1.010
2003	2.34%	2.41%	1.112	1.097	1.079	1.056	1.034
2004	2.43%	2.46%	1.140	1.124	1.105	1.082	1.060
2005	2.43%	2.43%	1.167	1.151	1.132	1.109	1.086
2006	2.42%	2.42%	1.196	1.179	1.160	1.135	1.112
2007	2.45%	2.44%	1.225	1.208	1.188	1.163	1.139
2008	2.43%	2.44%	1.255	1.238	1.217	1.191	1.167
2009	2.45%	2.45%	1.285	1.268	1.247	1.221	1.195
2010	2.48%	2.47%	1.317	1.299	1.277	1.251	1.225
2011	2.57%	2.55%	1.351	1.332	1.310	1.283	1.256
2012	2.68%	2.65%	1.387	1.368	1.345	1.317	1.289
2013	2.72%	2.71%	1.424	1.405	1.381	1.352	1.324
2014	2.77%	2.76%	1.463	1.443	1.419	1.390	1.361
2015	2.79%	2.79%	1.504	1.484	1.459	1.428	1.399
2016	2.84%	2.83%	1.547	1.526	1.500	1.469	1.438
2017	2.89%	2.88%	1.591	1.570	1.543	1.511	1.480
2018	2.95%	2.94%	1.638	1.616	1.589	1.555	1.523
2019	2.96%	2.96%	1.687	1.664	1.636	1.601	1.568

1/ Mid-Point Interest Rate Forecast. DRIWEFA CY 2002.Q3 & WEFA CY 1998.Q3 outlook. DRI-WEFA, The U.S. Economy: The 25-Year Focus, Spring Issue, 20
Trend Scenario. Base year Index = 1996

2/ Fiscal Year Cumulative Price Deflator escalates to midyear dollars. The first year, 2002, is determined as follows: 1.010 = [(2.0144/100)*.5] + 1. Subsequent years use the prior. An example of subsequent year cumulative growth such as in 2003 is found as: 1.034 = [1+ (2.406/100)]*1.010.

16 Year	17 Year	18 Year	19 Year	20 Year	21 Year	22 Year	23 Year	24 Year	25 Year	26 Year	27 Year	28 Year	29 Year	30 Year	50 Year	Year
7.16	7.20	7.24	7.28	7.32	7.34	7.36	7.38	7.40	7.42	7.44	7.47	7.49	7.51	7.53	7.53	**1997**
6.51	6.54	6.58	6.62	6.66	6.68	6.70	6.72	6.74	6.77	6.79	6.81	6.83	6.85	6.87	6.87	**1998**
6.57	6.61	6.65	6.69	6.73	6.75	6.77	6.80	6.82	6.84	6.86	6.88	6.90	6.93	6.95	6.95	**1999**
6.76	6.80	6.83	6.86	6.90	6.92	6.93	6.95	6.96	6.98	7.00	7.01	7.03	7.04	7.06	7.06	**2000**
6.40	6.45	6.49	6.53	6.58	6.60	6.63	6.65	6.68	6.70	6.73	6.75	6.78	6.80	6.83	6.83	**2001**
6.38	6.42	6.46	6.51	6.55	6.58	6.61	6.63	6.66	6.68	6.71	6.74	6.76	6.79	6.82	6.82	**2002**
6.56	6.60	6.65	6.69	6.73	6.75	6.78	6.80	6.82	6.85	6.87	6.89	6.92	6.94	6.96	6.96	**2003**
6.64	6.69	6.73	6.77	6.81	6.83	6.85	6.87	6.90	6.92	6.94	6.96	6.99	7.01	7.03	7.03	**2004**
6.59	6.63	6.67	6.71	6.75	6.77	6.79	6.82	6.84	6.86	6.89	6.91	6.93	6.95	6.98	6.98	**2005**
6.56	6.60	6.64	6.68	6.72	6.74	6.77	6.79	6.81	6.84	6.86	6.88	6.90	6.93	6.95	6.95	**2006**
6.55	6.59	6.63	6.67	6.71	6.74	6.76	6.78	6.80	6.83	6.85	6.87	6.89	6.91	6.94	6.94	**2007**
6.54	6.58	6.62	6.66	6.70	6.72	6.75	6.77	6.79	6.81	6.83	6.86	6.88	6.90	6.92	6.92	**2008**
6.54	6.58	6.62	6.65	6.69	6.72	6.74	6.76	6.78	6.80	6.82	6.85	6.87	6.89	6.91	6.91	**2009**
6.54	6.58	6.62	6.65	6.69	6.72	6.74	6.76	6.78	6.80	6.82	6.85	6.87	6.89	6.91	6.91	**2010**
6.55	6.59	6.63	6.67	6.71	6.73	6.75	6.78	6.80	6.82	6.84	6.86	6.88	6.90	6.92	6.92	**2011**
6.61	6.65	6.69	6.73	6.77	6.79	6.81	6.83	6.85	6.88	6.90	6.92	6.94	6.96	6.98	6.98	**2012**
6.71	6.75	6.79	6.83	6.86	6.88	6.91	6.93	6.95	6.97	6.99	7.01	7.03	7.05	7.07	7.07	**2013**
6.83	6.87	6.91	6.95	6.99	7.01	7.03	7.05	7.07	7.09	7.11	7.13	7.15	7.17	7.19	7.19	**2014**
6.91	6.95	6.99	7.03	7.07	7.09	7.11	7.13	7.15	7.17	7.19	7.21	7.23	7.25	7.27	7.27	**2015**
7.02	7.06	7.10	7.14	7.18	7.20	7.22	7.24	7.25	7.27	7.29	7.31	7.33	7.35	7.37	7.37	**2016**
7.13	7.17	7.21	7.24	7.28	7.30	7.32	7.34	7.36	7.38	7.40	7.42	7.44	7.46	7.47	7.47	**2017**
7.25	7.29	7.33	7.36	7.40	7.42	7.44	7.46	7.48	7.50	7.51	7.53	7.55	7.57	7.59	7.59	**2018**
7.32	7.36	7.40	7.44	7.47	7.49	7.51	7.53	7.55	7.57	7.59	7.61	7.63	7.65	7.67	7.67	**2019**

CHAPTER 6

PROJECTED NEW BONDS ISSUED TO TREASURY

Purpose: To provide the projected bonds that BPA plans to issue to the U.S. Treasury to finance BPA capital investments.

Method: New long-term debt consist of bonds issued by BPA to Treasury reflecting projected outlays for BPA Transmission and Environmental programs during the cost evaluation period (FY 2002-2005). All bonds projected for issuance are entered into the projected portions of the repayment study.

Application of Methodology: New bonds for the cost evaluation period are based on Programs in Review capital program outlays.

BPA Projected Transmission Federal Borrowing
FY 2002 - 2005
($ Thousands)

FY Year	Description	Interest Rate	Term	Total Borrowing	
2002	Construction	6.58	35	272,620	
	Environment	6.06	15	0	1/
2003	Construction	7.01	35	329,397	
	Environment	6.56	15	568	2/
				329,965	
2004	Construction	7.18	35	311,633	
	Environment	6.77	15	7,369	
				319,002	
2005	Construction	7.10	35	267,831	
	Environment	6.69	15	5,414	
				273,245	

1/ Capital projection is $8,293, but assumes cashing in of $8,293 in deferred borrowing carried over from 2001

2/ Capital projection is $7175, but assumes cashing in of $6,607 in deferred borrowing carried over from 2001

Association of Transmission Construction
Funded by Bonds 1/
FY 1977 - FY 2001
($ Thousands)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	
								Refinancing		
Fiscal Year	Plant in Service 2/	Amount Funded by Bonds	Amount of Bond Sales	Amount Outstanding	Interest Rate	Term	Year Due	Date	Amount	
1977	171,038	100,800 3/								
		50,000								
		20,238								
		171,038								
1978	90,494	54,762	50,000	0	8.95	35	2013			
		35,732								
		90,494								
1979	67,649	14,268	75,000	0	9.45	35	2014			
		53,381	50,000	0	9.90	35	2014			
		67,649								
1980	48,043	48,043	115,000	0	13.00	35	2015			
1981	253,151	13,576	175,000	0	16.60	35	2016			
		175,000								
		50,000								
		14,575								
		253,151								
1982	92,111	85,425	50,000	0	14.40	35	2017			
		6,686	100,000	0	14.40	35	2017			
			85,000	0	14.15	35	2017	7/31/1987	85,000	4/
		92,111								
1983	149,133	78,314	40,000	0	10.85	35	2018	2/29/1988	40,000	5/
		40,000	30,000	0	11.70	35	2018			
		30,000	45,000	0	12.25	35	2018			
		819								
		149,133								
1984	235,214	44,181	30,000	0	12.30	35	2019			
		30,000	60,000	0	13.05	35	2019			
		60,000								
		100,000								
		1,033								
		235,214								
1985	115,901	98,967	100,000	0	11.25	45	2030			
		16,934								
		115,901								
1986	326,694	283,066	100,000	0	8.15	10	1996			
		43,628	300,000	0	8.95	45	2031	8/31/1992	100,000	7/
								8/31/1992	100,000	8/ 20/
								5/31/1994	40,000	11/
		326,694								
1987	167,781	56,372	100,000	0	9.30	45	2032	4/30/1992	100,000	6/
		100,000	100,000	0	8.35	5	1992			
		11,409	50,000	0	9.55	45	2032			
		167,781								

1988	96,878	38,591	150,000		0	9.50	45	2033	10/31/1993	100,000	10/
									5/31/1994	50,000	11/
		58,287	40,000		0	9.90	45	2033			
		96,878									
1989	211,811	91,713	75,000		0	8.95	10	1999	5/31/1999	26,200	23/
		40,000									
		75,000									
		5,098									
		211,811									
1990	88,894	44,902	50,000		0	9.25	40	2030	1/31/2000	50,000	24/
		43,992									
		88,894									
1991	139,891	16,008	60,000		0	7.55	4	1995			
		123,883									
		139,891									
1992	214,883	26,117	150,000		0	8.80	40	2032	8/31/1997	103,300	15/
		50,000	50,000		0	7.00	5	1997			
		138,766	150,000		0	8.13	40	2032	4/30/1998	70,300	16/
		214,883							5/31/1998	67,900	17/ 26/
1993	209,541	11,234	50,000		0	6.05	5	1998			
		50,000	99,962	9/	0	8.35	40	2033			
		99,962	130,000		0	7.80	40	2033	5/31/1998	40,000	18/
										90,000	18/
		48,345	100,000		0	7.50	40	2033	8/31/1998	100,000	19/
			110,000		110,000	6.95	40	2033			
		209,541									
1994	239,060	81,655	50,000		50,000	6.85	40	2034			
		100,000	50,000		50,000	7.05	40	2034			
		57,405	50,000		0	8.20	40	2034			
			55,000		0	7.65	5	1999			
		239,060									
1995	290,154	52,595	55,000		0	8.35	6	2001			
		50,000	49,933	12/	34,976	7.70	30	2025			
		50,000	65,000		0	7.70	30	2025			
		50,000									
		55,000									
		32,559									
		290,154									
1996	146,886	22,441	54,378	13/	54,378	5.90	7	2003			
		49,933	70,000		70,000	7.05	10	2006			
		65,000									
		9,512									
		146,886									
1997	178,551	44,866	22,600	14/	22,600	6.80	7	2004			
		70,000	80,000		80,000	6.90	8	2005			
		22,600									
		41,085									
		178,551									
1998	149,940	38,915	50,000		50,000	6.65	30	2028			
		50,000	36,819	21/	36,819	5.75	10	2008			
		36,819									
		24,206									
		149,940									
1999	126,238	24,714	48,920	22/	48,920	5.90	15	2014			
		40,000	40,000		0	6.20	3	2002			
		61,524									
		126,238									

2000	104,957	17,528	40,000	40,000	6.40	3	2002
		40,000	39,052 25/	39,052	7.00	4	2004
		47,429	40,000	40,000	6.75	6	2006
		104,957					
2001	126,298	32,504	20,000	20,000	5.65	4	2005
		25,000	59,933 27/	59,933	6.05	9	2010
		50,000	25,000	25,000	5.95	10	2011
		18,794 29/	50,000	50,000	5.75	10	2011
		126,298					

1/ These investments have an estimated average service life of 40 years and a maximum repayment period of 40 years
2/ BPA's Summary Financial data, Analysis of Funds Returned to the U.S Treasury and Cash Amortization Table change in Total column from previous year
3/ Funded by appropriations (Reference WP-89-E-BPA-01A1, Documentation for the Revenue Requirement Study - Volume 1, 1989 Rate Proposal, page 195)
4/ Refinanced on 7/31/87 with $ 95,000 issued at 9.55%, 30 year term, due 2017
5/ Refinanced on 2/29/88 with $43,700 issued at 9.50%, 30 year term, due 2018
6/ Refinanced on 4/30/92 with $80,000 issued at 6.20%, 3 year term, due 1995; and $28,300 issued at 7.00%, 5 year term, due 1997
7/ Refinanced on 8/31/92 with $107,800 issued at 6.60%, 8 year term, due 2000
8/ Refinanced on 8/31/92 with $107,700 issued at 7.25%, 15 year term, due 2007
9/ $100,000 bond, $38 functionalized to Generation 1993
10/ Refinanced on 10/31/93 with $108,400 issued at 6.85%, 40 year term, due 2033.
11/ Refinanced on 5/31/94 with $97,100 issued at 7.1%, 4 year term, due 1998 (this new bond also refinanced one other bond
12/ $50,000 bond, $67 functionalized to Generation 1995
13/ $60,000 bond, $5,622 functionalized to Generation 1996
14/ $30,000 bond, $7,400 functionalized to Generation 1997
15/ Refinanced on 8/31/97 with $111,300 at 6.65% for 10 year term, due 2007.
16/ Refinanced on 4/30/1998 with $75,300 issued at 6.0%, 10 year term, due 2009
17/ Refinanced on 5/31/98 with $72,700 at 6.00% for 11 year term, due 2009 and $40,000 at 6.20% for 13 year term, due 2011.
18/ Refinanced on 5/31/98 with $40,000 issued at 6.20% for 13 year term, due 2011; and refinanced on 5/31/98 with $98,900 issued at 6.70%, 34 year term, due 2032
19/ Refinanced on 8/31/98 with $106,500 at 5.85% for 30 year term, due 2028
20/ Refinanced again on 8/31/98 with $112,300 at 5.85%, 30 year term, due 2028
21/ $40,000 bond, $3,181 functionalized to Generation 1998
22/ $60,000 bond, $11,080 functionalized to Generation 1999
23/ Refinanced on 5/31/99 with $26,200 issued at 5.95%, 5 year term, due 2004
24/ Refinanced on 1/31/2000 with $53,500 issued at 7.15%, 5 year term, due 2005
25/ $50,000 bond, $10,948 functionalized to Generation 2000
26/ Refinanced on 8/31/00 with $15,300 at 6.85% for 3 year term, due 2003
27/ $60,000 bond, $67 functionalized to Generation 2001
28/ $110,000 bond, $4,648 functionalized to Generation 2002
29/ This amount not yet financed through long-term bonds

Association of Environment Investment
Funded by Bonds
FY 1997 - 2001
($ Thousands)

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
Fiscal Year	Plant in Service	Amount Funded by Bonds	Amount of Bond Sales	Amount Outstanding	Interest Rate	Term	Year Due	Refinancing Date	Refinancing Amount
1995	16,014	16,014 1/							
1997	40,000	40,000	40,000	40,000	6.95	15	2011		
1999	10,517	10,517							
2000	9,394	9,394							
2001	12,091	10,089	30,000	30,000	6.05	9	2010		
		2,002 2/							
		12,091							

1/ Funded by construction bond
2/ These amounts either not yet financed or only partially financed thru long-term bonds

CHAPTER 7

REPLACEMENTS PROJECTED AFTER THE COST EVALUATION PERIOD

Purpose: To project the amount of additional capital investment necessary to maintain an existing project at its current operating level after the Cost Evaluation Period.

Method: BPA uses the Iowa Curve Methodology to forecast replacements for the transmission system.

Application of Methodology: The repayment study incorporates a schedule of Federal investment with the replacements that are expected to occur over the repayment period for the existing transmission system. This schedule is expressed in mid-year dollars for FYs 2004 through 2005 and is based on the amount of the plant-in-service in the transmission system for BPA through the end of the cost evaluation period.

Transmission Replacements:

The Iowa Curve methodology is used to calculate future replacements for the transmission system. The Iowa Curves are a set of curves with different shapes corresponding to how much of the initial asset survives as a function of time. They are described in the book Statistical Analyses of Industrial Property Retirements by Robley Winfrey, bulletin 125 revised, Engineering Research Institute, Iowa State University. The Iowa Curves are initially used in BPA's depreciation. BPA's total plant, catalogued by FERC account and in-service date, was analyzed and the various FERC accounts were assigned to various Iowa Curves.

A table from Winfrey's book, TABLE 22 - TOTAL RENEWALS FOR TYPE CURVES, tells what fraction of plant represented by a given curve will have to be replaced each tenth-

of-lifetime to maintain the initial plant. A data file with the contents of that table accurate to twelve lifetimes has been created for use in calculating BPA's future transmission replacements. *See* TABLE 22. For each of the Iowa Curves Table 22 will call for replacements equal to about 50 percent of the initial plant in the first lifetime and approaching 100 percent of initial plant in later lifetimes.

Table 22 gives replacement plant in the same physical units as the initial plant. The net investment in plant of any historical year must first be converted to units of physical plant by dividing the investment by an appropriate historical cost per unit plant. BPA's plant cost is converted to quasi-physical units of plant by use of the Handy-Whitman Index. The Handy-Whitman Index provides cost trends for electric, gas, telephone, and water utilities in geographical regions of generally similar characteristics. The Handy-Whitman Index numbers are widely used in the industry to trend original cost records to estimate reproduction cost at prices prevailing at a later date. The cost trends for each of the utilities are further subdivided by type of plant. In particular, the cost trends for electrical utilities include trends for total transmission plant and trends for the major FERC accounts within transmission plant. *See* table entitled HANDY-WHITMAN INDICES. The trends for individual FERC accounts are used when available. The trends for total transmission plant are used for those accounts for which no specific trend is included.

Surviving transmission plant investment by FERC account and in-service year is obtained from BPA's Plant Investment Section. *See* years 1940 through 2005 of table entitled PLANT INVESTMENT BY YEAR AND ACCOUNT. The plant investment of each year and account is divided by the corresponding Handy-Whitman number to obtain plant in quasi-physical units. The quasi-physical plant is then multiplied by factors obtained by interpolating in the appropriate column of Table 22 to obtain quasi-physical replacements for all years from the last year of the Handy-Whitman index through the last year of the

repayment period. The resulting quasi-physical units are multiplied by the Handy-Whitman number for the last year of the index for the corresponding FERC account to yield replacement costs in the dollars of that last year. These replacement costs are accumulated by future year and FERC account. *See* table entitled REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS.

Gross plant investment data for the cost evaluation period is obtained from BPA's Budget Support. *See* table entitled COST-EVALUATION PERIOD DATA. This latter plant is first de-escalated to the dollars of the last year of the Handy-Whitman index and then distributed among the various FERC accounts in the same proportions as the total plant of BPA's summary of BPA investment from plant balances as of September 30, 2001. *See* years 1940 through 2005 of table entitled PLANT INVESTMENT BY YEAR AND ACCOUNT. Some of the historical plant obtained from the Plant Investment Section will be retired during the cost evaluation period and be replaced with plant funded by amounts obtained from Budget Support. If future replacements were calculated for both, a double counting would occur. Therefore the amount budgeted for a cost evaluation period year is reduced by the amount calculated for replacements for the same year. Future replacements are then calculated for only the remaining net initial investment of that year. *See* table entitled ADJUSTED PLANT INVESTMENT BY YEAR AND FERC ACCOUNT.

The replacement costs of each future year and FERC account are then accumulated for all FERC accounts and inflated from the dollars of the most recent Handy-Whitman year to the dollars of the rate change year. *See* the table entitled FUTURE REPLACEMENTS.

AC Intertie Replacements:

Future replacements on the AC Intertie Facilities are calculated separately so that the contributions made toward those replacements by Non-Federal Capacity Owners can be

properly credited in the repayment studies. For historical plant, the plant investment as of September 30, 2001 in each of the lines and substations composing the AC Intertie System (*see* LINES and SUBSTATIONS) was apportioned among the years on the basis of the same line or substation data in a recent plant investment file. These investments by year were accumulated for all lines and substations to obtain historical plant investment by year. These annual investments were apportioned among land and the major FERC accounts on the same basis as the total lines and substations. *See* table entitled AC INTERTIE PLANT-IN-SERVICE.

The cost-evaluation period data for the AC Intertie was obtained. *See* the table entitled Segmentation Summary. The resulting plant data was then processed by the replacement methodology as described above. Those listings that apply only to the AC Intertie follow those for the transmission system. The results are the future replacements for the total AC Intertie and have to be multiplied by the appropriate fraction, 21 percent, to obtain the future contributions required by new capacity owners. These fractional parts, together with the amounts budgeted for the cost evaluation period, are entered into the Transmission Repayment Studies as negative expenses in the Capital Contract Obligation field. *See* Chapters 9 and 11, Repayment Study Input Data.

TABLE A

SUMMARY OF SEGMENTED INVESTMENT

As of September 30, 2001

($)

Segment	ID	9/30/2001 Lines	9/30/2001 Substations	9/30/2001 Total	9/30/1998 Lines	9/30/1998 Substations	9/30/1998 Total
DSI Delivery	DSI	0	79,408,997	79,408,997	0	88,154,482	88,154,482
Generation integration	GI	16,465,887	43,443,234	59,909,121	15,483,753	43,361,401	58,845,154
Eastern Intertie	IE	98,248,694	23,866,195	122,114,889	97,890,490	23,866,195	121,756,685
Southern AC Intertie	ISAC	167,996,152	154,688,159	322,684,310	168,283,191	160,697,655	328,980,846
Southern DC Intertie	ISDC	29,157,322	308,124,415	337,281,737	29,095,036	309,856,051	338,951,087
Network	N	1,658,195,262	1,332,351,158	2,990,546,420	1,646,973,650	1,292,779,262	2,939,752,912
Utility Delivery	UD	31,479	62,352,720	62,384,199	31,483	88,282,645	88,314,128
Total		1,970,094,796	2,004,234,879	3,974,329,674	1,957,757,603	2,006,997,690	3,964,755,293

The details for line investment are shown in chapter 1.
The details for substation investment are shown in chapter 2.

Plant-In-Service Projection Summary

SUB-LIN-GP Summary

	FY 02	FY 03	FY 04	FY 05	FY 06
TOTAL Plant-In-Service - (SUB'S)	81,858.4	74,834.3	113,194.9	195,645.4	106,967.9
TOTAL Plant-In-Service - (LINES)	30,466.3	32,879.7	50,993.7	220,067.4	161,002.4
TOTAL Plant-In-Service - (GEN PLNT)	63,416.7	53,171.3	60,632.7	63,134.4	58,692.8
Grand Total	$175,741.4	$160,885.4	$224,821.3	$478,847.3	$326,663.1

Substations Summary By Segment - w/ Indirects Rolled Into The Segments

Segment	FY 02	FY 03	FY 04	FY 05	FY 06
DSI Segment	2,081.0	1,439.7	1,704.9	996.6	1,277.9
Generation Integration Segment	971.5	663.7	579.4	456.3	598.3
Montana Intertie Segment	423.1	479.5	387.6	317.0	408.1
Network Segment	72,768.2	67,309.5	105,569.8	138,008.1	99,857.8
Public Utility Segment	1,560.8	1,079.7	1,415.7	747.5	958.4
AC Intertie Segment	2,238.4	2,170.9	1,962.5	1,642.9	2,137.8
DC Intertie Segment	1,815.3	1,691.3	1,574.9	53,477.2	1,729.7
Subst. Grand Total	$81,858.4	$74,834.3	$113,194.9	$195,645.4	$106,967.9

Lines Summary By Segment - w/ Indirects Rolled Into The Segments

Segment	FY 02	FY 03	FY 04	FY 05	FY 06
DSI Segment	723.8	680.4	499.8	292.5	289.3
Generation Integration Segment	264.6	269.1	185.4	112.6	118.1
Montana Intertie Segment	661.4	672.8	463.5	281.5	295.3
Network Segment	27,713.5	29,717.9	49,222.8	219,664.9	160,163.3
Public Utility Segment	542.9	510.3	353.5	219.4	217.0
AC Intertie Segment	1,530.8	1,511.2	1,044.0	636.2	669.3
DC Intertie Segment	869.3	838.3	580.6	354.7	374.0
Lines Grand Total	$32,306.3	$34,199.9	$52,349.5	$221,561.8	$162,126.2

General Plant Summary By Account

Account	FY 02	FY 03	FY 04	FY 05	FY 06
Metering Stations	144.0	112.0	117.8	127.7	103.6
Cntl. Equip.	26,858.8	23,679.0	24,841.8	28,026.2	25,286.9
Comm. Equip.	19,926.8	11,945.5	31,872.3	18,578.7	18,925.2
Structures & Imp.	6,311.5	9,127.2	8,531.8	8,782.4	6,733.3
Data Processing Equip. & Software	1,107.9	1,157.1	1,235.8	1,272.5	1,293.3
Tools, Shop & Garage Equip.	908.0	716.4	682.1	636.2	636.6
Stores Equip.	1,356.0	1,068.1	1,015.8	946.7	947.3
Helicopter	908.0	716.4	682.1	636.2	636.6
Lab Equip.	1,815.9	1,432.7	1,364.1	1,272.4	1,273.1
Test Facilities	0.0	0.0	0.0	0.0	0.0
Land & Land Rights	0.0	0.0	0.0	0.0	0.0
Fixed Wing	908.0	716.4	682.1	636.2	636.6
Office Furn. & Fixtures	0.0	0.0	0.0	0.0	0.0
Rolling Stocks	1,356.0	1,068.1	1,015.8	946.7	947.3
Power Operations Equip.	1,815.9	1,432.7	1,364.1	1,272.4	1,273.1
General Plant Grand Total	$63,416.7	$53,171.3	$73,405.5	$63,134.4	$58,692.8

BPA REPLACEMENTS

1 TABLE22 FROM 'STATISTICAL ANALYSES OF INDUSTRIAL PROPERTY RETIREMENTS' BY ROBLEY WINFREY, BULLETIN 125, IOWA STATE UNIVERSITY

	L0	L1	L2	L3	L4	L5	S0	S1	S2	S3	S4	S5	S6	R1	R2	R3	R4	R5	O1
1	2.93	.95	.11	.00	.00	.00	1.17	.16	.00	.00	.00	.00	.00	2.78	1.14	.15	.02	.00	2.53
2	4.82	2.09	.68	.08	.00	.00	2.68	.89	.12	.00	.00	.00	.00	3.23	1.57	.40	.06	.00	5.25
3	5.92	3.64	1.60	.47	.00	.00	3.84	2.03	.58	.06	.00	.00	.00	3.69	2.12	.88	.19	.00	5.52
4	6.72	5.35	2.78	1.22	.16	.00	4.83	3.36	1.59	.38	.00	.00	.00	4.18	2.81	1.60	.51	.00	5.80
5	7.32	6.90	4.83	2.40	.95	.01	5.71	4.78	3.16	1.34	.10	.00	.00	4.76	3.67	2.59	1.18	.05	6.10
6	7.77	7.95	7.42	4.63	2.64	.46	6.52	6.17	5.18	3.32	.79	.02	.00	5.47	4.73	3.83	2.45	.46	6.41
7	8.18	8.45	9.50	8.28	5.00	2.64	7.25	7.48	7.39	6.36	3.28	.46	.00	6.31	6.01	5.37	4.53	1.96	6.74
8	8.54	8.82	10.62	12.11	8.66	6.70	7.94	8.63	9.49	10.00	8.66	4.05	.36	7.25	7.50	7.50	7.49	5.59	7.09
9	8.87	9.16	10.85	14.12	16.35	14.73	8.56	9.61	11.20	13.32	15.88	15.63	8.93	8.25	9.17	10.38	11.23	13.40	7.45
10	9.16	9.47	10.58	13.60	20.53	28.50	9.14	10.37	12.30	15.36	21.28	29.85	40.71	9.24	10.85	13.57	17.14	24.92	7.83
11	9.41	9.73	10.20	11.66	16.77	23.71	9.67	10.92	12.71	15.52	21.28	29.85	40.71	10.16	12.32	15.94	21.62	29.98	8.23
12	9.62	9.93	9.93	9.80	11.27	12.45	10.14	11.24	12.45	13.88	15.91	15.63	8.93	10.94	13.23	16.20	18.76	18.70	8.66
13	9.78	10.08	9.86	8.80	7.93	6.23	10.54	11.34	11.68	11.17	8.80	4.05	.36	11.52	13.26	13.79	11.69	4.71	9.10
14	9.92	10.18	9.94	8.70	6.40	3.26	10.86	11.24	10.64	8.49	3.79	.47	.00	11.84	12.34	9.97	5.69	.49	9.57
15	10.01	10.24	10.06	9.14	6.00	2.09	11.08	10.96	9.61	6.79	2.20	.14	.00	11.86	10.85	7.63	3.08	.65	10.06
16	10.08	10.25	10.16	9.76	6.57	2.78	11.20	10.54	8.84	6.50	3.31	.74	.01	11.56	9.54	6.34	3.94	1.78	10.57
17	10.12	10.24	10.19	10.26	8.12	5.42	11.17	10.05	8.52	7.44	6.10	2.95	.30	10.97	8.66	6.31	5.87	4.13	11.11
18	10.15	10.21	10.16	10.48	10.34	9.68	10.95	9.55	8.69	8.99	9.76	8.16	3.18	10.18	8.04	7.68	8.19	8.17	11.68
19	10.15	10.16	10.09	10.42	12.28	14.97	10.48	9.17	9.23	10.50	13.32	15.90	14.83	9.39	8.17	9.13	10.67	13.68	12.28
20	10.14	10.11	10.02	10.18	12.93	18.28	9.55	9.08	9.89	11.51	15.55	22.11	31.68	8.87	8.94	10.46	12.94	18.94	12.91
21	10.12	10.06	9.96	9.94	12.22	16.98	8.86	9.43	10.38	11.87	15.61	22.11	31.68	8.74	9.66	11.48	14.43	20.78	11.01
22	10.10	10.01	9.93	9.80	10.88	12.84	9.22	9.81	10.62	11.60	13.57	15.90	14.83	9.15	10.24	12.00	14.40	17.13	8.76
23	10.08	9.97	9.92	9.80	9.62	8.75	9.51	10.06	10.62	10.91	10.39	8.19	3.18	9.52	10.62	11.92	12.67	10.08	8.93
24	10.05	9.95	9.94	9.89	8.78	5.94	9.73	10.20	10.48	10.07	7.45	3.11	.30	9.84	10.79	11.29	10.00	4.35	9.10
25	10.03	9.94	9.96	10.00	8.47	4.73	9.90	10.26	10.25	9.37	5.82	1.35	.02	10.08	10.77	10.35	7.64	2.27	9.26
26	10.01	9.94	9.99	10.07	8.69	5.25	10.02	10.25	10.02	8.99	5.88	2.06	.15	10.25	10.58	9.44	6.54	3.02	9.41
27	10.00	9.94	10.00	10.10	9.33	7.28	10.10	10.20	9.84	8.99	7.34	4.82	1.23	10.34	10.30	8.84	6.85	5.40	9.56
28	9.98	9.96	10.02	10.07	10.12	10.24	10.15	10.13	9.75	9.31	9.53	9.42	5.79	10.36	10.00	8.70	8.11	8.85	9.69
29	9.98	9.97	10.02	10.03	10.73	13.08	10.17	10.05	9.74	9.78	11.62	14.70	16.08	10.31	9.76	8.97	9.70	12.74	9.82
30	9.98	9.99	10.02	9.98	10.96	14.53	10.16	9.99	9.79	10.23	12.94	18.34	26.73	10.23	9.61	9.49	11.13	15.91	9.93
31	9.98	10.00	10.01	9.96	10.79	13.98	10.14	9.94	9.89	10.52	13.10	18.35	26.73	10.13	9.59	10.06	12.06	16.93	10.03
32	9.98	10.01	10.00	9.96	10.38	11.95	10.10	9.91	9.99	10.59	12.15	14.73	16.08	10.02	9.67	10.50	12.29	15.07	10.11
33	9.98	10.01	10.00	9.98	9.93	9.53	10.06	9.91	10.07	10.47	10.54	9.55	5.79	9.93	9.82	10.73	11.77	11.12	10.17
34	9.99	10.01	10.00	10.00	9.60	7.61	10.02	9.92	10.12	10.22	8.92	5.26	1.24	9.86	9.98	10.71	10.70	7.04	10.21
35	9.99	10.01	10.00	10.01	9.46	6.72	9.98	9.95	10.12	9.96	7.86	3.21	.22	9.84	10.11	10.50	9.49	4.65	10.24
36	10.00	10.01	10.00	10.02	9.52	7.04	9.94	9.98	10.09	9.76	7.67	3.60	.51	9.84	10.19	10.18	8.57	4.54	10.23
37	10.00	10.00	10.00	10.01	9.75	8.36	9.92	10.01	10.04	9.67	8.33	6.01	2.36	9.88	10.20	9.86	8.26	6.24	10.20
38	10.00	10.00	10.00	10.01	10.02	10.19	9.92	10.03	10.00	9.70	9.49	9.73	7.47	9.93	10.17	9.63	8.58	8.94	10.14
39	10.00	10.00	10.00	10.00	10.23	11.82	9.93	10.04	9.96	9.82	10.70	13.56	16.07	9.99	10.10	9.54	9.33	11.83	10.05
40	10.00	10.00	10.00	9.99	10.32	12.63	9.96	10.04	9.95	9.97	11.53	16.02	23.53	10.03	10.03	9.61	10.18	14.02	9.92

1 TABLE22 FROM 'STATISTICAL ANALYSES OF INDUSTRIAL PROPERTY RETIREMENTS' BY ROBLEY WINFREY, BULLETIN 125, IOWA STATE UNIVERSITY

	L0	L1	L2	L3	L4	L5	S0	S1	S2	S3	S4	S5	S6	R1	R2	R3	R4	R5	O1
41	10.00	10.00	10.00	9.99	10.28	12.36	9.99	10.02	9.95	10.10	11.73	16.04	23.53	10.06	9.96	9.77	10.86	14.74	9.78
42	10.00	10.00	10.00	10.00	10.15	11.24	10.02	10.01	9.96	10.17	11.30	13.66	16.07	10.07	9.92	9.97	11.18	13.67	9.80
43	10.00	10.00	10.00	10.00	9.99	9.80	10.03	10.00	9.98	10.18	10.47	10.02	7.48	10.06	9.90	10.15	11.09	11.21	9.85
44	10.00	10.00	10.00	10.00	9.87	8.60	10.03	9.99	10.00	10.13	9.56	6.70	2.39	10.04	9.91	10.25	10.66	8.43	9.89
45	10.00	10.00	10.00	10.00	9.81	8.02	10.03	9.99	10.02	10.05	8.91	4.88	.70	10.02	9.94	10.26	10.06	6.47	9.93
46	10.00	10.00	10.00	10.00	9.83	8.19	10.02	10.00	10.02	9.97	8.71	5.02	1.05	10.00	9.98	10.20	9.51	6.01	9.96
47	10.00	10.00	10.00	10.00	9.90	9.00	10.01	10.00	10.02	9.92	8.99	6.89	3.38	9.99	10.01	10.09	9.18	7.01	9.99
48	10.00	10.00	10.00	10.00	10.00	10.10	10.01	10.00	10.02	9.90	9.59	9.76	8.49	9.98	10.04	9.97	9.16	8.95	10.00
49	10.00	10.00	10.00	10.00	10.07	11.07	10.00	10.00	10.01	9.91	10.26	12.63	15.66	9.97	10.05	9.88	9.42	11.09	10.02
50	10.00	10.00	10.00	10.00	10.11	11.55	9.99	10.00	10.00	9.95	10.77	14.42	21.26	9.97	10.04	9.84	9.84	12.73	10.03
51	10.00	10.00	10.00	10.00	10.10	11.42	9.99	10.00	9.99	10.00	10.95	14.47	21.26	9.98	10.01	9.85	10.26	13.32	10.03
52	10.00	10.00	10.00	10.00	10.06	10.77	9.99	10.00	9.99	10.04	10.78	12.81	15.66	9.98	9.99	9.90	10.54	12.69	10.03
53	10.00	10.00	10.00	10.00	10.00	9.92	9.99	10.00	9.99	10.06	10.35	10.19	8.50	9.99	9.98	9.98	10.61	11.10	10.02
54	10.00	10.00	10.00	10.00	9.96	9.18	10.00	10.00	9.99	10.05	9.85	7.67	3.46	10.00	9.97	10.04	10.47	9.18	10.01
55	10.00	10.00	10.00	10.00	9.94	8.81	10.00	10.00	10.00	10.04	9.46	6.19	1.40	10.01	9.97	10.08	10.20	7.70	10.00
56	10.00	10.00	10.00	10.00	9.94	8.90	10.00	10.00	10.00	10.01	9.30	6.20	1.72	10.01	9.98	10.10	9.90	7.18	9.99
57	10.00	10.00	10.00	10.00	9.96	9.39	10.00	10.00	10.00	9.98	9.40	7.57	4.25	10.01	10.00	10.08	9.66	7.72	9.98
58	10.00	10.00	10.00	10.00	10.00	10.05	10.00	10.00	10.00	9.97	9.70	9.75	9.09	10.01	10.01	10.04	9.53	9.03	9.97
59	10.00	10.00	10.00	10.00	10.02	10.63	10.00	10.00	10.00	9.97	10.08	11.91	15.14	10.00	10.01	10.00	9.62	10.58	9.96
60	10.00	10.00	10.00	10.00	10.04	10.92	10.00	10.00	10.00	9.98	10.38	13.27	19.53	10.00	10.02	9.96	9.79	11.82	9.96
61	10.00	10.00	10.00	10.00	10.04	10.85	10.00	10.00	10.00	9.99	10.52	13.34	19.53	10.00	10.01	9.94	10.02	12.34	9.96
62	10.00	10.00	10.00	10.00	10.02	10.48	10.00	10.00	10.00	10.00	10.46	12.16	15.14	9.99	10.01	9.94	10.20	11.98	9.97
63	10.00	10.00	10.00	10.00	10.00	9.97	10.00	10.00	10.00	10.01	10.24	10.24	9.12	9.99	10.00	9.96	10.30	10.94	9.98
64	10.00	10.00	10.00	10.00	9.99	9.52	10.00	10.00	10.00	10.02	9.97	8.35	4.39	9.99	10.00	9.98	10.29	9.61	9.99
65	10.00	10.00	10.00	10.00	9.98	9.29	10.00	10.00	10.00	10.02	9.74	7.18	2.18	9.99	9.99	10.01	10.18	8.51	9.99
66	10.00	10.00	10.00	10.00	9.98	9.34	10.00	10.00	10.00	10.01	9.62	7.12	2.44	10.00	9.99	10.03	10.03	8.03	9.99
67	10.00	10.00	10.00	10.00	9.99	9.62	10.00	10.00	10.00	10.00	9.65	8.12	4.97	10.00	9.99	10.03	9.88	8.30	9.99
68	10.00	10.00	10.00	10.00	10.00	10.02	10.00	10.00	10.00	9.99	9.80	9.74	9.44	10.00	10.00	10.03	9.79	9.16	9.99
69	10.00	10.00	10.00	10.00	10.01	10.37	10.00	10.00	10.00	9.99	10.00	11.38	14.60	10.00	10.00	10.02	9.78	10.26	9.99
70	10.00	10.00	10.00	10.00	10.01	10.55	10.00	10.00	10.00	9.99	10.18	12.42	18.17	10.00	10.00	10.00	9.84	11.19	9.99
71	10.00	10.00	10.00	10.00	10.01	10.51	10.00	10.00	10.00	9.99	10.28	12.51	18.17	10.00	10.00	9.99	9.94	11.63	9.99
72	10.00	10.00	10.00	10.00	10.01	10.29	10.00	10.00	10.00	10.00	10.26	11.66	14.62	10.00	10.00	9.98	10.05	11.46	9.99
73	10.00	10.00	10.00	10.00	10.00	9.99	10.00	10.00	10.00	10.00	10.16	10.25	9.50	10.00	10.00	9.98	10.13	10.77	9.98
74	10.00	10.00	10.00	10.00	10.00	9.72	10.00	10.00	10.00	10.00	10.01	8.82	5.18	10.00	10.00	9.98	10.16	9.85	9.98
75	10.00	10.00	10.00	10.00	9.99	9.58	10.00	10.00	10.00	10.00	9.88	7.92	2.98	10.00	10.00	9.99	10.13	9.04	9.98
76	10.00	10.00	10.00	10.00	9.99	9.60	10.00	10.00	10.00	10.00	9.80	7.83	3.18	10.00	10.00	10.00	10.06	8.63	9.98
77	10.00	10.00	10.00	10.00	9.99	9.77	10.00	10.00	10.00	10.00	9.80	8.54	5.58	10.00	10.00	10.01	9.98	8.74	9.98
78	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.87	9.75	9.64	10.00	10.00	10.01	9.91	9.30	9.98
79	10.00	10.00	10.00	10.00	10.00	10.22	10.00	10.00	10.00	10.00	9.98	10.99	14.09	10.00	10.00	10.01	9.88	10.08	9.98
80	10.00	10.00	10.00	10.00	10.00	10.33	10.00	10.00	10.00	10.00	10.08	11.79	17.06	10.00	10.00	10.01	9.89	10.76	9.98

1 TABLE22 FROM 'STATISTICAL ANALYSES OF INDUSTRIAL PROPERTY RETIREMENTS' BY ROBLEY WINFREY, BULLETIN 125, IOWA STATE UNIVERSITY

	L0	L1	L2	L3	L4	L5	S0	S1	S2	S3	S4	S5	S6	R1	R2	R3	R4	R5	O1
81	10.00	10.00	10.00	10.00	10.00	10.31	10.00	10.00	10.00	10.00	10.14	11.88	17.06	10.00	10.00	10.00	9.91	11.13	9.98
82	10.00	10.00	10.00	10.00	10.00	10.18	10.00	10.00	10.00	10.00	10.15	11.28	14.12	10.00	10.00	10.00	9.97	11.07	9.99
83	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.10	10.24	11.07	10.00	10.00	10.00	10.03	10.62	9.99
84	10.00	10.00	10.00	10.00	10.00	9.84	10.00	10.00	10.00	10.00	10.02	9.16	4.51	10.00	10.00	10.00	10.08	9.98	9.99
85	10.00	10.00	10.00	10.00	10.00	9.75	10.00	10.00	10.00	10.00	9.94	8.46	3.75	10.00	10.00	10.00	10.09	9.39	9.99
86	10.00	10.00	10.00	10.00	10.00	9.76	10.00	10.00	10.00	10.00	9.90	8.37	3.88	10.00	10.00	10.00	10.07	9.06	9.99
87	10.00	10.00	10.00	10.00	10.00	9.86	10.00	10.00	10.00	10.00	9.89	8.88	6.10	10.00	10.00	10.00	10.02	9.09	9.99
88	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.92	9.77	9.75	10.00	10.00	10.00	9.98	9.44	9.98
89	10.00	10.00	10.00	10.00	10.00	10.12	10.00	10.00	10.00	10.00	9.98	10.70	13.62	10.00	10.00	10.00	9.95	9.98	9.98
90	10.00	10.00	10.00	10.00	10.00	10.19	10.00	10.00	10.00	10.00	10.04	11.32	16.13	10.00	10.00	10.00	9.94	10.48	9.98
91	10.00	10.00	10.00	10.00	10.00	10.19	10.00	10.00	10.00	10.00	10.08	11.42	16.17	10.00	10.00	10.00	9.95	10.78	9.98
92	10.00	10.00	10.00	10.00	10.00	10.11	10.00	10.00	10.00	10.00	10.08	10.98	13.94	10.00	10.00	10.00	9.98	10.78	9.98
93	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.06	10.21	10.23	10.00	10.00	10.00	10.02	10.49	9.98
94	10.00	10.00	10.00	10.00	10.00	9.90	10.00	10.00	10.00	10.00	10.02	9.41	6.06	10.00	10.00	10.00	10.04	10.05	9.98
95	10.00	10.00	10.00	10.00	10.00	9.85	10.00	10.00	10.00	10.00	9.98	8.86	4.18	10.00	10.00	10.00	10.05	9.62	9.98
96	10.00	10.00	10.00	10.00	10.00	9.85	10.00	10.00	10.00	10.00	9.95	8.77	4.52	10.00	10.00	10.00	10.04	9.36	9.98
97	10.00	10.00	10.00	10.00	10.00	9.91	10.00	10.00	10.00	10.00	9.94	9.14	6.55	10.00	10.00	10.00	10.01	9.34	9.98
98	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.95	9.80	9.81	10.00	10.00	10.00	9.98	9.56	9.98
99	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	9.98	10.50	13.19	10.00	10.00	10.00	9.99	9.93	9.98
100	10.00	10.00	10.00	10.00	10.00	10.12	10.00	10.00	10.00	10.00	10.01	10.97	15.36	10.00	10.00	10.00	10.01	10.30	9.98
101	10.00	10.00	10.00	10.00	10.00	10.11	10.00	10.00	10.00	10.00	10.04	11.06	15.45	10.00	10.00	10.00	10.01	10.53	9.98
102	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	10.05	10.76	13.46	10.00	10.00	10.00	10.02	10.56	9.98
103	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.04	10.19	10.12	10.00	10.00	10.00	10.02	10.38	9.98
104	10.00	10.00	10.00	10.00	10.00	9.94	10.00	10.00	10.00	10.00	10.02	9.57	6.74	10.00	10.00	10.00	10.02	10.08	9.98
105	10.00	10.00	10.00	10.00	10.00	9.91	10.00	10.00	10.00	10.00	9.99	9.16	4.89	10.00	10.00	10.00	10.01	9.77	9.98
106	10.00	10.00	10.00	10.00	10.00	9.91	10.00	10.00	10.00	10.00	9.97	9.08	5.07	10.00	10.00	10.00	10.00	9.56	9.98
107	10.00	10.00	10.00	10.00	10.00	9.95	10.00	10.00	10.00	10.00	9.96	9.34	6.94	10.00	10.00	10.00	9.99	9.53	9.98
108	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.97	9.83	9.85	10.00	10.00	10.00	9.98	9.66	9.98
109	10.00	10.00	10.00	10.00	10.00	10.04	10.00	10.00	10.00	10.00	9.99	10.35	12.81	10.00	10.00	10.00	9.99	9.91	9.98
110	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	10.00	10.72	14.70	10.00	10.00	10.00	10.00	10.18	9.98
111	10.00	10.00	10.00	10.00	10.00	10.07	10.00	10.00	10.00	10.00	10.02	10.80	14.79	10.00	10.00	10.00	10.00	10.36	9.98
112	10.00	10.00	10.00	10.00	10.00	10.04	10.00	10.00	10.00	10.00	10.03	10.58	13.04	10.00	10.00	10.00	10.01	10.40	9.98
113	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.02	10.16	10.11	10.00	10.00	10.00	10.01	10.29	9.98
114	10.00	10.00	10.00	10.00	10.00	9.97	10.00	10.00	10.00	10.00	10.01	9.70	7.21	10.00	10.00	10.00	10.01	10.09	9.98
115	10.00	10.00	10.00	10.00	10.00	9.95	10.00	10.00	10.00	10.00	10.00	9.38	5.53	10.00	10.00	10.00	10.00	9.87	9.98
116	10.00	10.00	10.00	10.00	10.00	9.95	10.00	10.00	10.00	10.00	9.99	9.31	5.61	10.00	10.00	10.00	9.99	9.71	9.98
117	10.00	10.00	10.00	10.00	10.00	9.97	10.00	10.00	10.00	10.00	9.98	9.49	7.27	10.00	10.00	10.00	9.99	9.66	9.98
118	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.98	9.85	9.86	10.00	10.00	10.00	9.99	9.74	9.98
119	10.00	10.00	10.00	10.00	10.00	10.02	10.00	10.00	10.00	10.00	9.99	10.25	12.47	10.00	10.00	10.00	10.00	9.91	9.98
120	10.00	10.00	10.00	10.00	10.00	10.04	10.00	10.00	10.00	10.00	10.00	10.53	14.13	10.00	10.00	10.00	10.00	10.10	9.98

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C HANDY-WHITMAN INDICES 1/1/01:                                                 1
 C                                                                              1
 C       TOTAL  STATN  TOWRS  POLES  OVRHD                                     1
 C YEAR  PLANT  EQPMT  & FIX  & FIX  CNDCT                                      1
 C               #353   #354   #355   #356                                      1
 C                                                                              1
   1940     22     35     17     15     22                                     1
   1941     23     36     19     17     23                                    40
   1942     25     37     20     18     25                                    41
   1943     25     36     20     19     26                                    42
   1944     25     35     21     21     26                                    43
   1945     26     35     21     22     26                                    44
   1946     29     39     24     24     30                                    45
   1947     34     47     28     29     35                                    46
   1948     37     49     31     32     39                                    47
   1949     38     52     32     32     39                                    48
   1950     40     56     34     33     41                                    49
   1951     45     63     37     36     47                                    50
   1952     46     64     39     37     49                                    51
   1953     49     68     41     39     51                                    52
   1954     50     69     42     40     52                                    53
   1955     52     70     43     42     55                                    54
   1956     56     77     46     44     61                                    55
   1957     57     81     48     47     63                                    56
   1958     59     84     51     49     63                                    57
   1959     60     83     53     50     62                                    58
   1960     60     77     55     52     63                                    59
   1961     59     70     57     53     63                                    60
   1962     59     69     57     54     65                                    61
   1963     59     65     59     55     61                                    62
   1964     61     69     61     56     64                                    63
   1965     64     73     63     58     67                                    64
   1966     67     75     67     61     70                                    65
   1967     70     79     71     63     73                                    66
   1968     73     83     74     65     73                                    67
   1969     78     85     78     69     80                                    68
   1970     83     89     82     76     89                                    69
   1971     89     91     87     81     98                                    70
   1972     93     94     92     87     99                                    71
   1973    100    100    100    100    100                                    72
   1974    124    124    123    126    117                                    73
   1975    145    148    147    145    146                                    74
   1976    158    156    150    150    173                                    75
   1977    172    172    154    160    191                                    76
   1978    174    182    170    170    176                                    77
   1979    190    196    186    190    194                                    78
   1980    211    217    210    210    215                                    79
   1981    230    235    227    233    237                                    80
   1982    245    254    229    253    251                                    81
   1983    254    257    233    257    277                                    82
   1984    255    261    247    263    265                                    83
   1985    252    260    254    255    250                                    84
   1986    256    262    262    258    254                                    85
   1987    257    270    267    260    234                                    86
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1988	286	280	280	282	326	87
1989	296	295	288	301	320	88
1990	308	315	290	309	333	89
1991	314	315	281	334	356	90
1992	310	323	283	353	312	91
1993	321	335	297	359	325	92
1994	336	353	314	376	333	93
1995	353	365	321	391	368	94
1996	358	365	332	410	372	95
1997	363	369	340	419	373	96
1998	375	382	347	428	391	97
1999	369	388	354	419	354	98
2000	373	391	365	413	356	99
2001	401	421	377	432	403	100

COST EVALUATION PERIOD DATA:

YEAR, ESC FACT AND PROJ PLANT

2002	1.00700	175741.0
2003	1.02800	160885.0
2004	1.05200	224821.0
2005	1.07700	478847.0

1 PLANT INVESTMENT BY YEAR AND ACCOUNT

YEAR	R2 60 1	R3 60 1	SQ 40 2	S0 39 2	R2 34 2	R3 34 2	R3 100 3	R2 50 4
1940	304.	238.	0.	1820.	0.	0.	1165.	22.
1941	750.	466.	0.	1431.	0.	0.	3833.	309.
1942	376.	337.	0.	1475.	0.	0.	68.	303.
1943	439.	297.	0.	1813.	0.	0.	4237.	56.
1944	23.	7.	0.	9.	0.	0.	1.	11.
1945	31.	16.	0.	276.	0.	0.	538.	102.
1946	97.	78.	0.	324.	0.	0.	613.	49.
1947	109.	34.	0.	64.	0.	0.	9.	165.
1948	176.	152.	0.	1473.	0.	0.	325.	273.
1949	44.	44.	0.	2458.	0.	0.	394.	584.
1950	411.	343.	0.	1970.	0.	0.	3994.	487.
1951	283.	215.	0.	2863.	0.	0.	2043.	428.
1952	459.	189.	0.	2722.	0.	0.	7448.	324.
1953	1073.	713.	0.	9480.	0.	0.	9406.	1702.
1954	567.	463.	0.	3913.	0.	0.	13091.	717.
1955	768.	459.	0.	6235.	0.	0.	2126.	217.
1956	526.	361.	0.	7653.	0.	0.	16296.	205.
1957	749.	536.	0.	8310.	0.	0.	1479.	691.
1958	445.	339.	0.	6879.	0.	0.	5519.	954.
1959	320.	160.	0.	7256.	0.	0.	2177.	563.
1960	425.	80.	0.	3000.	0.	0.	770.	186.
1961	666.	195.	0.	4415.	0.	0.	3222.	372.
1962	397.	280.	0.	3463.	0.	0.	11359.	669.
1963	1656.	159.	0.	2994.	0.	0.	1223.	222.
1964	527.	296.	0.	2737.	0.	0.	2201.	105.
1965	803.	91.	0.	3620.	0.	0.	9012.	152.
1966	358.	293.	0.	9080.	0.	0.	4065.	561.
1967	797.	584.	0.	8659.	0.	0.	11304.	404.
1968	1558.	1363.	0.	17090.	0.	0.	34717.	159.
1969	1783.	1061.	0.	18367.	0.	0.	26192.	578.
1970	5896.	5781.	0.	61046.	0.	0.	26607.	583.
1971	932.	689.	0.	0.	5625.	5625.	16012.	319.
1972	3519.	1196.	0.	0.	7369.	7369.	14962.	606.
1973	2613.	1080.	0.	0.	8102.	8102.	28660.	275.
1974	2251.	560.	0.	0.	7723.	7723.	6504.	806.
1975	3193.	1834.	0.	0.	12180.	12180.	20982.	947.
1976	1750.	1073.	0.	0.	12757.	12757.	33087.	1035.
1977	8561.	1319.	0.	0.	15079.	15079.	62116.	747.
1978	2342.	885.	0.	0.	21999.	21999.	7713.	733.
1979	6512.	523.	0.	0.	9757.	9757.	9162.	1047.
1980	1795.	860.	0.	0.	9948.	9948.	14706.	395.
1981	2248.	1215.	0.	0.	21185.	21185.	61361.	629.
1982	2344.	950.	0.	0.	16620.	16620.	3576.	338.
1983	9758.	2629.	0.	0.	19867.	19867.	28605.	1488.
1984	7926.	3632.	0.	0.	33491.	33491.	76261.	1663.
1985	6121.	4147.	0.	0.	37234.	37234.	242.	1048.
1986	4041.	2578.	0.	0.	11533.	11533.	7491.	4252.
1987	5531.	3753.	0.	0.	16801.	16801.	100491.	6967.

1988	5293.	4435.	0.	0.	11525.	11525.	4838.	1331.
1989	17714.	13046.	0.	0.	65285.	65285.	2056.	1855.
1990	5645.	2002.	0.	0.	26852.	26852.	3377.	684.
1991	9276.	3316.	0.	0.	47988.	47988.	1305.	763.
1992	9680.	1579.	0.	0.	60649.	60649.	11016.	1056.
1993	8040.	4187.	0.	0.	40552.	40552.	14158.	1510.
1994	39212.	14191.	0.	0.	117805.	117805.	5807.	1875.
1995	8405.	5854.	0.	0.	35235.	35235.	826.	778.
1996	14498.	3756.	1078.	0.	42922.	42922.	1685.	99.
1997	6187.	3518.	3.	0.	44232.	44232.	16096.	1083.
1998	13668.	5666.	145.	0.	27796.	27796.	8932.	1451.
1999	5253.	2730.	3458.	0.	37001.	37001.	-645.	3753.
2000	1032.	767.	0.	0.	20295.	20295.	96.	1039.
2001	2081.	1273.	0.	0.	27092.	27092.	1404.	1909.
2002	9073.	4187.	177.	7663.	32951.	32951.	29017.	2063.
2003	8306.	3833.	162.	7015.	30166.	30166.	26564.	1889.
2004	11607.	5357.	226.	9803.	42154.	42154.	37120.	2640.
2005	24721.	11409.	482.	20879.	89783.	89783.	79062.	5622.

1 PLANT INVESTMENT BY YEAR AND ACCOUNT

YEAR	R3	R4	S3	R4	SQ	SQ	L3	SQ
	50	100	30	75	20	5	10	15
	4	5	1	1	1	1	1	1
1940	22.	1337.	0.	100.	0.	0.	0.	0.
1941	309.	6813.	0.	145.	0.	0.	0.	0.
1942	303.	1715.	0.	289.	0.	0.	0.	0.
1943	56.	3638.	0.	428.	0.	0.	0.	0.
1944	11.	328.	0.	131.	0.	0.	0.	0.
1945	102.	489.	0.	101.	0.	0.	0.	0.
1946	49.	443.	0.	20.	0.	0.	0.	0.
1947	165.	561.	0.	112.	0.	0.	0.	0.
1948	273.	1928.	0.	177.	0.	0.	0.	0.
1949	584.	1618.	0.	114.	0.	0.	0.	0.
1950	487.	5746.	0.	998.	0.	0.	0.	0.
1951	428.	4309.	0.	12.	0.	0.	0.	0.
1952	324.	7377.	194.	9.	0.	0.	0.	0.
1953	1702.	10975.	0.	231.	0.	0.	0.	0.
1954	717.	12380.	0.	1592.	0.	0.	1.	0.
1955	217.	2606.	0.	50.	0.	0.	0.	0.
1956	205.	12919.	0.	356.	0.	0.	33.	0.
1957	691.	3667.	0.	299.	0.	0.	0.	0.
1958	954.	6998.	0.	740.	0.	0.	0.	0.
1959	563.	3629.	0.	236.	0.	0.	0.	0.
1960	186.	1110.	0.	40.	0.	0.	0.	0.
1961	372.	4187.	0.	286.	0.	0.	0.	0.
1962	669.	9864.	0.	543.	0.	0.	0.	0.
1963	222.	1842.	0.	402.	0.	0.	7.	0.
1964	105.	1508.	0.	53.	0.	0.	19.	0.
1965	152.	11667.	0.	538.	0.	0.	0.	0.
1966	561.	6233.	0.	274.	0.	0.	8.	0.
1967	404.	12198.	1401.	235.	0.	0.	16.	0.
1968	159.	36861.	0.	1036.	0.	0.	32.	0.
1969	578.	27856.	0.	487.	0.	0.	127.	0.
1970	583.	28542.	0.	943.	0.	0.	123.	0.
1971	319.	14207.	0.	328.	0.	0.	250.	0.
1972	606.	18862.	0.	879.	0.	0.	66.	0.
1973	275.	26381.	1494.	1615.	0.	0.	587.	0.
1974	806.	7249.	0.	1121.	0.	0.	437.	0.
1975	947.	15017.	0.	1320.	0.	0.	730.	0.
1976	1035.	29182.	1318.	860.	0.	0.	301.	0.
1977	747.	69004.	65.	1017.	0.	0.	304.	0.
1978	733.	7684.	43.	51.	0.	0.	1018.	0.
1979	1047.	12052.	0.	1337.	0.	0.	245.	0.
1980	395.	16057.	0.	201.	0.	0.	246.	0.
1981	629.	64666.	0.	527.	0.	0.	565.	0.
1982	338.	5060.	0.	356.	0.	0.	781.	0.
1983	1488.	28663.	0.	827.	0.	0.	355.	1562.
1984	1663.	80157.	0.	8400.	0.	0.	59.	0.
1985	1048.	1672.	4573.	59.	0.	0.	240.	0.
1986	4252.	16166.	0.	742.	0.	0.	116.	2102.

1987	6967.	145662.	0.	40293.	0.	0.	57.	6414.
1988	1331.	6827.	0.	309.	0.	0.	350.	6059.
1989	1855.	2294.	0.	141.	0.	0.	1215.	5705.
1990	684.	2590.	0.	0.	0.	0.	358.	20471.
1991	763.	3258.	0.	0.	0.	0.	1232.	11183.
1992	1056.	20042.	0.	2021.	0.	0.	1772.	37791.
1993	1510.	23660.	0.	4254.	0.	0.	976.	29865.
1994	1875.	4879.	0.	118.	0.	0.	805.	34418.
1995	778.	5072.	0.	201.	639.	0.	1076.	22437.
1996	99.	4008.	0.	2.	0.	0.	1267.	45083.
1997	1083.	12459.	14.	2638.	0.	0.	533.	50822.
1998	1451.	12847.	7.	1784.	0.	0.	371.	49740.
1999	3753.	172.	0.	416.	0.	5358.	548.	89999.
2000	1039.	717.	0.	0.	0.	1744.	0.	10063.
2001	1909.	2802.	0.	1193.	0.	6097.	0.	6330.
2002	2063.	33639.	344.	3172.	24.	498.	651.	16241.
2003	1889.	30795.	315.	2904.	22.	456.	596.	14868.
2004	2640.	43034.	440.	4058.	31.	638.	832.	20777.
2005	5622.	91657.	937.	8643.	66.	1358.	1773.	44253.

1 PLANT INVESTMENT BY YEAR AND ACCOUNT

YEAR	SQ 30 1	SQ 25 1	L2 15 1	
1940	0.	0.	0.	5008.
1941	0.	0.	0.	14056.
1942	0.	0.	0.	4866.
1943	0.	0.	0.	10964.
1944	0.	0.	0.	521.
1945	0.	0.	0.	1655.
1946	0.	0.	0.	1673.
1947	0.	0.	0.	1219.
1948	0.	0.	0.	4777.
1949	0.	0.	0.	5840.
1950	0.	0.	0.	14436.
1951	0.	0.	0.	10581.
1952	0.	0.	0.	19046.
1953	0.	0.	0.	35282.
1954	0.	0.	0.	33441.
1955	0.	0.	0.	12678.
1956	0.	0.	0.	38554.
1957	0.	0.	0.	16422.
1958	0.	0.	0.	22828.
1959	0.	0.	26.	14930.
1960	0.	0.	0.	5797.
1961	0.	0.	0.	13715.
1962	0.	0.	0.	27244.
1963	0.	0.	0.	8727.
1964	0.	0.	22.	7573.
1965	0.	0.	0.	26035.
1966	0.	0.	16.	21449.
1967	0.	0.	7.	36009.
1968	0.	0.	18.	92993.
1969	0.	0.	95.	77124.
1970	0.	0.	36.	130140.
1971	0.	0.	12.	44318.
1972	0.	0.	115.	55549.
1973	0.	0.	167.	79351.
1974	0.	0.	247.	35427.
1975	0.	0.	198.	69528.
1976	0.	0.	841.	95996.
1977	0.	0.	860.	174898.
1978	0.	0.	325.	65525.
1979	0.	0.	615.	52054.
1980	1653.	4054.	-3746.	56512.
1981	44.	68.	598.	174920.
1982	0.	0.	600.	47583.
1983	0.	0.	1155.	116264.
1984	0.	0.	989.	247732.
1985	0.	0.	1047.	94665.
1986	0.	0.	1280.	66086.
1987	0.	0.	593.	350330.
1988	0.	0.	513.	54336.

1989	0.	0.	310.	176761.
1990	0.	0.	981.	90496.
1991	0.	0.	1076.	128148.
1992	0.	0.	3014.	210325.
1993	0.	0.	2357.	171621.
1994	0.	0.	723.	339513.
1995	0.	0.	943.	117479.
1996	2.	0.	1665.	159086.
1997	0.	0.	1.	182901.
1998	0.	0.	395.	152049.
1999	214.	1615.	1329.	191955.
2000	0.	101.	0.	57188.
2001	0.	0.	0.	79182.
2002	72.	220.	734.	175741.
2003	66.	202.	672.	160885.
2004	92.	282.	938.	224821.
2005	197.	601.	1999.	478847.

1 ADJUSTED PLANT INVESTMENT BY YEAR AND FERC ACCOUNT

YEAR	R2	R3	SQ	S0	R2	R3	R3	R2
	60	60	40	39	34	34	100	50
	1	1	2	2	2	2	3	4
2002	-3310.	-1702.	0.	-27304.	-15624.	-12866.	-4603.	-3147.
2003	-3434.	-1789.	0.	-27615.	-16732.	-14314.	-4825.	-3232.
2004	-3559.	-1878.	0.	-27869.	-17833.	-15857.	-5053.	-3311.
2005	21039.	9444.	482.	-7205.	70811.	72298.	73777.	2238.

YEAR	R3	R4	S3	R4	SQ	SQ	L3	SQ
	50	100	30	75	20	5	10	15
	4	5	1	1	1	1	1	1
2002	-3512.	-2429.	-965.	-594.	0.	0.	-2991.	0.
2003	-3615.	-2610.	-978.	-636.	0.	0.	-3035.	0.
2004	-3711.	-2802.	-991.	-681.	0.	0.	-3056.	0.
2005	1824.	88654.	-59.	7914.	66.	1358.	-1270.	44253.

YEAR	SQ	SQ	L2				
	30	25	15				
	1	1	1				
2002	0.	0.	-1689.	0.	0.	0.	-80736.
2003	0.	0.	-1771.	0.	0.	0.	-84586.
2004	0.	0.	-1831.	0.	0.	0.	-88432.
2005	197.	601.	131.	0.	0.	0.	386553.

1 2003 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	3310.	1702.	0.	27304.	15624.	12866.	4603.	3147.
2003	3434.	1789.	0.	27615.	16732.	14314.	4825.	3232.
2004	3564.	1879.	0.	27879.	17892.	15865.	5054.	3313.
2005	3695.	1966.	0.	28147.	19111.	17504.	5287.	3390.
2006	3830.	2053.	0.	28414.	20349.	19204.	5527.	3465.
2007	3963.	2139.	0.	28667.	21632.	20987.	5777.	3535.
2008	4100.	2227.	0.	28901.	22943.	22802.	6034.	3602.
2009	4238.	2317.	0.	29128.	24276.	24621.	6302.	3666.
2010	4380.	2411.	0.	29343.	25638.	26457.	6577.	3726.
2011	4521.	2500.	0.	29542.	27003.	28251.	6857.	3779.
2012	4664.	2585.	0.	29718.	28369.	30001.	7144.	3825.
2013	4808.	2668.	0.	29880.	29728.	31676.	7441.	3865.
2014	4953.	2752.	0.	30022.	31076.	33278.	7745.	3903.
2015	5100.	2837.	0.	30142.	32384.	34775.	8054.	3938.
2016	5249.	2926.	0.	30233.	33659.	36188.	8370.	3966.
2017	5396.	3012.	0.	30314.	34904.	37528.	8699.	3985.
2018	5544.	3094.	0.	30378.	36071.	38732.	9037.	4000.
2019	5692.	3174.	0.	30422.	37184.	39908.	9391.	4013.
2020	5840.	3252.	0.	30443.	38242.	41055.	9755.	4024.
2021	5988.	3329.	0.	30462.	39218.	42097.	10125.	4029.
2022	6137.	3409.	0.	30465.	40109.	43034.	10507.	4028.
2023	6285.	3491.	0.	30450.	40941.	43934.	10899.	4025.
2024	6431.	3574.	0.	30417.	41690.	44756.	11299.	4021.
2025	6577.	3656.	0.	30366.	42329.	45424.	11706.	4014.
2026	6722.	3734.	0.	30285.	42893.	45957.	12121.	4006.
2027	6864.	3809.	0.	30176.	43372.	46341.	12546.	3996.
2028	7006.	3879.	0.	30035.	43749.	46601.	12983.	3986.
2029	7147.	3952.	0.	29881.	43998.	46604.	13436.	3975.
2030	7287.	4026.	0.	29720.	44158.	46458.	13901.	3965.
2031	7425.	4098.	0.	29534.	44201.	46101.	14373.	3955.
2032	7562.	4166.	0.	29333.	44131.	45578.	14859.	3947.
2033	7693.	4231.	0.	29134.	43971.	44864.	15359.	3939.
2034	7821.	4284.	0.	28959.	43677.	43835.	15873.	3930.
2035	7947.	4344.	0.	28763.	43325.	42724.	16396.	3922.
2036	8071.	4404.	0.	28571.	42884.	41552.	16927.	3915.
2037	8192.	4464.	0.	28392.	42358.	40238.	17462.	3910.
2038	8309.	4520.	0.	28221.	41769.	38912.	18008.	3906.

1 2002 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	3310.	1702.	0.	27304.	15624.	12866.	4603.	3147.
2003	3440.	1790.	0.	27627.	16797.	14322.	4826.	3234.
2004	3573.	1879.	0.	27935.	17980.	15878.	5055.	3318.
2005	3706.	1967.	0.	28241.	19191.	17520.	5288.	3398.
2006	3839.	2053.	0.	28536.	20436.	19224.	5528.	3473.
2007	3973.	2140.	0.	28817.	21727.	21010.	5779.	3544.
2008	4110.	2228.	0.	29078.	23047.	22835.	6035.	3612.
2009	4249.	2319.	0.	29331.	24391.	24662.	6304.	3676.
2010	4391.	2412.	0.	29568.	25761.	26504.	6580.	3737.
2011	4533.	2501.	0.	29789.	27137.	28309.	6859.	3791.
2012	4676.	2587.	0.	29986.	28516.	30071.	7147.	3837.
2013	4821.	2671.	0.	30168.	29887.	31757.	7444.	3878.
2014	4966.	2755.	0.	30329.	31247.	33370.	7748.	3917.
2015	5114.	2840.	0.	30467.	32572.	34885.	8057.	3953.
2016	5264.	2929.	0.	30576.	33861.	36313.	8374.	3981.
2017	5412.	3015.	0.	30674.	35120.	37667.	8703.	4002.
2018	5561.	3098.	0.	30755.	36306.	38892.	9041.	4018.
2019	5709.	3179.	0.	30815.	37437.	40087.	9395.	4032.
2020	5858.	3257.	0.	30852.	38513.	41252.	9760.	4043.
2021	6007.	3334.	0.	30887.	39509.	42315.	10131.	4049.
2022	6157.	3415.	0.	30905.	40423.	43277.	10512.	4050.
2023	6305.	3497.	0.	30905.	41277.	44200.	10905.	4048.
2024	6453.	3580.	0.	30887.	42048.	45045.	11306.	4045.
2025	6600.	3663.	0.	30849.	42714.	45751.	11712.	4039.
2026	6746.	3742.	0.	30783.	43303.	46316.	12128.	4032.
2027	6889.	3818.	0.	30687.	43807.	46732.	12554.	4024.
2028	7032.	3888.	0.	30559.	44212.	47034.	12992.	4015.
2029	7174.	3962.	0.	30418.	44490.	47084.	13445.	4006.
2030	7316.	4036.	0.	30270.	44678.	46982.	13910.	3997.
2031	7455.	4110.	0.	30097.	44750.	46668.	14383.	3990.
2032	7592.	4179.	0.	29908.	44708.	46195.	14870.	3983.
2033	7725.	4244.	0.	29722.	44577.	45529.	15370.	3977.
2034	7854.	4298.	0.	29557.	44311.	44547.	15884.	3969.
2035	7982.	4358.	0.	29373.	43983.	43467.	16408.	3963.
2036	8108.	4419.	0.	29193.	43566.	42327.	16940.	3958.
2037	8229.	4480.	0.	29024.	43065.	41048.	17475.	3955.

1 2002 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	3512.	2429.	965.	594.	0.	0.	2991.	0.
2003	3615.	2610.	978.	636.	0.	0.	3035.	0.
2004	3711.	2803.	991.	681.	0.	0.	3059.	0.
2005	3800.	3004.	996.	729.	0.	0.	3058.	0.
2006	3874.	3217.	995.	779.	0.	0.	3034.	0.
2007	3931.	3449.	993.	836.	0.	0.	2984.	0.
2008	3977.	3696.	987.	896.	0.	0.	2900.	0.
2009	4018.	3960.	976.	959.	0.	0.	2800.	0.
2010	4057.	4236.	965.	1023.	0.	0.	2725.	0.
2011	4079.	4520.	952.	1090.	0.	0.	2707.	0.
2012	4081.	4817.	938.	1160.	0.	0.	2740.	0.
2013	4073.	5130.	924.	1231.	0.	0.	2789.	0.
2014	4062.	5462.	910.	1307.	0.	0.	2826.	0.
2015	4046.	5806.	896.	1387.	0.	0.	2840.	0.
2016	4018.	6167.	883.	1467.	0.	0.	2836.	0.
2017	3980.	6550.	870.	1548.	0.	0.	2822.	0.
2018	3941.	6951.	859.	1633.	0.	0.	2808.	0.
2019	3903.	7373.	848.	1723.	0.	0.	2799.	0.
2020	3864.	7811.	839.	1812.	0.	0.	2797.	0.
2021	3828.	8259.	831.	1900.	0.	0.	2801.	0.
2022	3797.	8724.	824.	1987.	0.	0.	2807.	0.
2023	3768.	9214.	819.	2068.	0.	0.	2811.	0.
2024	3741.	9728.	817.	2149.	0.	0.	2813.	0.
2025	3717.	10258.	814.	2229.	0.	0.	2812.	0.
2026	3703.	10811.	814.	2310.	0.	0.	2809.	0.
2027	3697.	11406.	817.	2389.	0.	0.	2807.	0.
2028	3695.	12026.	820.	2466.	0.	0.	2806.	0.
2029	3692.	12678.	825.	2543.	0.	0.	2806.	0.
2030	3693.	13349.	832.	2609.	0.	0.	2807.	0.
2031	3702.	14034.	839.	2673.	0.	0.	2808.	0.
2032	3720.	14736.	847.	2737.	0.	0.	2809.	0.
2033	3740.	15475.	856.	2797.	0.	0.	2809.	0.
2034	3761.	16242.	865.	2846.	0.	0.	2809.	0.
2035	3783.	17029.	873.	2894.	0.	0.	2808.	0.
2036	3811.	17839.	879.	2943.	0.	0.	2808.	0.
2037	3846.	18657.	886.	2992.	0.	0.	2807.	0.

1 2002 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	1689.	80736.
2003	0.	0.	1772.	84682.
2004	0.	0.	1837.	88698.
2005	0.	0.	1882.	92781.
2006	0.	0.	1913.	96902.
2007	0.	0.	1931.	101112.
2008	0.	0.	1934.	105335.
2009	0.	0.	1930.	109573.
2010	0.	0.	1918.	113877.
2011	0.	0.	1906.	118175.
2012	0.	0.	1896.	122452.
2013	0.	0.	1889.	126662.
2014	0.	0.	1886.	130784.
2015	0.	0.	1884.	134746.
2016	0.	0.	1885.	138553.
2017	0.	0.	1887.	142249.
2018	0.	0.	1887.	145748.
2019	0.	0.	1888.	149186.
2020	0.	0.	1887.	152545.
2021	0.	0.	1885.	155736.
2022	0.	0.	1882.	158760.
2023	0.	0.	1880.	161699.
2024	0.	0.	1877.	164488.
2025	0.	0.	1876.	167035.
2026	0.	0.	1875.	169372.
2027	0.	0.	1875.	171502.
2028	0.	0.	1875.	173421.
2029	0.	0.	1876.	175000.
2030	0.	0.	1876.	176356.
2031	0.	0.	1878.	177384.
2032	0.	0.	1878.	178163.
2033	0.	0.	1879.	178699.
2034	0.	0.	1880.	178824.
2035	0.	0.	1881.	178802.
2036	0.	0.	1881.	178672.
2037	0.	0.	1881.	178348.

1 2003 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	3310.	1702.	0.	27304.	15624.	12866.	4603.	3147.
2003	3434.	1789.	0.	27615.	16732.	14314.	4825.	3232.
2004	3564.	1879.	0.	27879.	17892.	15865.	5054.	3313.
2005	3695.	1966.	0.	28147.	19111.	17504.	5287.	3390.
2006	3830.	2053.	0.	28414.	20349.	19204.	5527.	3465.
2007	3963.	2139.	0.	28667.	21632.	20987.	5777.	3535.
2008	4100.	2227.	0.	28901.	22943.	22802.	6034.	3602.
2009	4238.	2317.	0.	29128.	24276.	24621.	6302.	3666.
2010	4380.	2411.	0.	29343.	25638.	26457.	6577.	3726.
2011	4521.	2500.	0.	29542.	27003.	28251.	6857.	3779.
2012	4664.	2585.	0.	29718.	28369.	30001.	7144.	3825.
2013	4808.	2668.	0.	29880.	29728.	31676.	7441.	3865.
2014	4953.	2752.	0.	30022.	31076.	33278.	7745.	3903.
2015	5100.	2837.	0.	30142.	32384.	34775.	8054.	3938.
2016	5249.	2926.	0.	30233.	33659.	36188.	8370.	3966.
2017	5396.	3012.	0.	30314.	34904.	37528.	8699.	3985.
2018	5544.	3094.	0.	30378.	36071.	38732.	9037.	4000.
2019	5692.	3174.	0.	30422.	37184.	39908.	9391.	4013.
2020	5840.	3252.	0.	30443.	38242.	41055.	9755.	4024.
2021	5988.	3329.	0.	30462.	39218.	42097.	10125.	4029.
2022	6137.	3409.	0.	30465.	40109.	43034.	10507.	4028.
2023	6285.	3491.	0.	30450.	40941.	43934.	10899.	4025.
2024	6431.	3574.	0.	30417.	41690.	44756.	11299.	4021.
2025	6577.	3656.	0.	30366.	42329.	45424.	11706.	4014.
2026	6722.	3734.	0.	30285.	42893.	45957.	12121.	4006.
2027	6864.	3809.	0.	30176.	43372.	46341.	12546.	3996.
2028	7006.	3879.	0.	30035.	43749.	46601.	12983.	3986.
2029	7147.	3952.	0.	29881.	43998.	46604.	13436.	3975.
2030	7287.	4026.	0.	29720.	44158.	46458.	13901.	3965.
2031	7425.	4098.	0.	29534.	44201.	46101.	14373.	3955.
2032	7562.	4166.	0.	29333.	44131.	45578.	14859.	3947.
2033	7693.	4231.	0.	29134.	43971.	44864.	15359.	3939.
2034	7821.	4284.	0.	28959.	43677.	43835.	15873.	3930.
2035	7947.	4344.	0.	28763.	43325.	42724.	16396.	3922.
2036	8071.	4404.	0.	28571.	42884.	41552.	16927.	3915.
2037	8192.	4464.	0.	28392.	42358.	40238.	17462.	3910.
2038	8309.	4520.	0.	28221.	41769.	38912.	18008.	3906.

1 2003 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	3512.	2429.	965.	594.	0.	0.	2991.	0.
2003	3615.	2610.	978.	636.	0.	0.	3035.	0.
2004	3711.	2802.	991.	681.	0.	0.	3056.	0.
2005	3799.	3003.	996.	729.	0.	0.	3046.	0.
2006	3873.	3217.	995.	779.	0.	0.	3002.	0.
2007	3929.	3449.	993.	836.	0.	0.	2917.	0.
2008	3974.	3696.	987.	896.	0.	0.	2772.	0.
2009	4016.	3960.	976.	959.	0.	0.	2576.	0.
2010	4054.	4236.	965.	1023.	0.	0.	2391.	0.
2011	4075.	4520.	952.	1090.	0.	0.	2297.	0.
2012	4076.	4817.	938.	1160.	0.	0.	2319.	0.
2013	4068.	5130.	923.	1231.	0.	0.	2411.	0.
2014	4056.	5461.	908.	1307.	0.	0.	2503.	0.
2015	4040.	5806.	893.	1386.	0.	0.	2556.	0.
2016	4011.	6166.	878.	1467.	0.	0.	2564.	0.
2017	3971.	6549.	864.	1548.	0.	0.	2543.	0.
2018	3931.	6950.	851.	1633.	0.	0.	2512.	0.
2019	3891.	7372.	837.	1723.	0.	0.	2487.	0.
2020	3852.	7810.	825.	1812.	0.	0.	2476.	0.
2021	3815.	8258.	814.	1900.	0.	0.	2479.	0.
2022	3782.	8723.	803.	1986.	0.	0.	2490.	0.
2023	3752.	9213.	794.	2068.	0.	0.	2502.	0.
2024	3722.	9727.	788.	2148.	0.	0.	2509.	0.
2025	3697.	10257.	781.	2229.	0.	0.	2509.	0.
2026	3681.	10809.	778.	2309.	0.	0.	2504.	0.
2027	3674.	11405.	777.	2389.	0.	0.	2499.	0.
2028	3669.	12024.	776.	2465.	0.	0.	2495.	0.
2029	3665.	12676.	779.	2542.	0.	0.	2494.	0.
2030	3663.	13347.	783.	2608.	0.	0.	2495.	0.
2031	3670.	14031.	788.	2672.	0.	0.	2498.	0.
2032	3686.	14733.	795.	2735.	0.	0.	2500.	0.
2033	3704.	15472.	804.	2795.	0.	0.	2501.	0.
2034	3723.	16239.	813.	2844.	0.	0.	2501.	0.
2035	3742.	17025.	822.	2893.	0.	0.	2500.	0.
2036	3767.	17836.	831.	2941.	0.	0.	2499.	0.
2037	3799.	18653.	840.	2990.	0.	0.	2498.	0.
2038	3833.	19494.	848.	3034.	0.	0.	2498.	0.

1 2003 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	1689.	80736.
2003	0.	0.	1771.	84586.
2004	0.	0.	1832.	88520.
2005	0.	0.	1873.	92548.
2006	0.	0.	1896.	96602.
2007	0.	0.	1905.	100728.
2008	0.	0.	1897.	104829.
2009	0.	0.	1876.	108911.
2010	0.	0.	1845.	113046.
2011	0.	0.	1814.	117201.
2012	0.	0.	1786.	121402.
2013	0.	0.	1766.	125596.
2014	0.	0.	1757.	129722.
2015	0.	0.	1753.	133663.
2016	0.	0.	1754.	137431.
2017	0.	0.	1758.	141071.
2018	0.	0.	1761.	144494.
2019	0.	0.	1764.	147858.
2020	0.	0.	1765.	151151.
2021	0.	0.	1764.	154278.
2022	0.	0.	1761.	157234.
2023	0.	0.	1758.	160112.
2024	0.	0.	1755.	162837.
2025	0.	0.	1752.	165297.
2026	0.	0.	1751.	167551.
2027	0.	0.	1750.	169598.
2028	0.	0.	1751.	171421.
2029	0.	0.	1752.	172901.
2030	0.	0.	1753.	174165.
2031	0.	0.	1755.	175101.
2032	0.	0.	1756.	175782.
2033	0.	0.	1758.	176225.
2034	0.	0.	1759.	176257.
2035	0.	0.	1759.	176162.
2036	0.	0.	1760.	175958.
2037	0.	0.	1760.	175556.
2038	0.	0.	1759.	175112.

1 2004 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	3310.	1702.	0.	27304.	15624.	12866.	4603.	3147.
2003	3434.	1789.	0.	27615.	16732.	14314.	4825.	3232.
2004	3559.	1878.	0.	27869.	17833.	15857.	5053.	3311.
2005	3690.	1966.	0.	28098.	19055.	17496.	5286.	3386.
2006	3824.	2052.	0.	28331.	20317.	19196.	5526.	3459.
2007	3962.	2138.	0.	28558.	21599.	20978.	5777.	3529.
2008	4098.	2226.	0.	28767.	22907.	22792.	6033.	3595.
2009	4237.	2317.	0.	28970.	24236.	24605.	6302.	3659.
2010	4378.	2410.	0.	29163.	25594.	26438.	6578.	3718.
2011	4520.	2499.	0.	29343.	26956.	28231.	6858.	3771.
2012	4662.	2584.	0.	29500.	28318.	29976.	7145.	3816.
2013	4806.	2668.	0.	29642.	29672.	31646.	7442.	3856.
2014	4951.	2751.	0.	29767.	31017.	33245.	7746.	3893.
2015	5098.	2836.	0.	29870.	32321.	34739.	8055.	3928.
2016	5246.	2925.	0.	29945.	33588.	36144.	8372.	3955.
2017	5394.	3011.	0.	30010.	34828.	37480.	8701.	3974.
2018	5542.	3093.	0.	30058.	35991.	38681.	9038.	3988.
2019	5689.	3173.	0.	30087.	37096.	39849.	9392.	4000.
2020	5838.	3251.	0.	30094.	38147.	40991.	9757.	4010.
2021	5986.	3328.	0.	30099.	39118.	42029.	10127.	4014.
2022	6134.	3408.	0.	30088.	40002.	42958.	10508.	4013.
2023	6282.	3490.	0.	30060.	40825.	43849.	10900.	4009.
2024	6429.	3572.	0.	30014.	41567.	44665.	11302.	4004.
2025	6574.	3654.	0.	29949.	42199.	45329.	11708.	3996.
2026	6719.	3732.	0.	29856.	42752.	45843.	12124.	3987.
2027	6861.	3807.	0.	29735.	43223.	46218.	12549.	3976.
2028	7002.	3877.	0.	29582.	43593.	46471.	12987.	3965.
2029	7144.	3950.	0.	29416.	43832.	46457.	13438.	3953.
2030	7284.	4023.	0.	29243.	43981.	46293.	13904.	3941.
2031	7421.	4095.	0.	29045.	44016.	45926.	14377.	3931.
2032	7558.	4163.	0.	28833.	43938.	45392.	14863.	3922.
2033	7689.	4228.	0.	28624.	43769.	44662.	15363.	3912.
2034	7816.	4281.	0.	28438.	43466.	43622.	15878.	3902.
2035	7943.	4340.	0.	28231.	43106.	42500.	16402.	3892.
2036	8067.	4401.	0.	28030.	42660.	41333.	16933.	3884.
2037	8187.	4460.	0.	27840.	42128.	40016.	17468.	3878.
2038	8304.	4516.	0.	27660.	41532.	38682.	18014.	3872.
2039	8415.	4568.	0.	27450.	40915.	37466.	18566.	3866.

1 2004 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	3512.	2429.	965.	594.	0.	0.	2991.	0.
2003	3615.	2610.	978.	636.	0.	0.	3035.	0.
2004	3711.	2802.	991.	681.	0.	0.	3056.	0.
2005	3798.	3003.	996.	729.	0.	0.	3043.	0.
2006	3872.	3217.	995.	779.	0.	0.	2991.	0.
2007	3928.	3449.	993.	836.	0.	0.	2887.	0.
2008	3973.	3696.	987.	896.	0.	0.	2711.	0.
2009	4014.	3960.	976.	959.	0.	0.	2459.	0.
2010	4052.	4236.	965.	1023.	0.	0.	2186.	0.
2011	4073.	4520.	952.	1090.	0.	0.	1992.	0.
2012	4073.	4817.	937.	1160.	0.	0.	1945.	0.
2013	4064.	5130.	922.	1231.	0.	0.	2027.	0.
2014	4052.	5462.	907.	1307.	0.	0.	2159.	0.
2015	4035.	5806.	891.	1386.	0.	0.	2262.	0.
2016	4005.	6167.	875.	1467.	0.	0.	2305.	0.
2017	3965.	6549.	860.	1548.	0.	0.	2295.	0.
2018	3924.	6950.	845.	1633.	0.	0.	2257.	0.
2019	3884.	7372.	830.	1723.	0.	0.	2217.	0.
2020	3843.	7810.	815.	1812.	0.	0.	2191.	0.
2021	3805.	8259.	802.	1900.	0.	0.	2186.	0.
2022	3771.	8723.	788.	1986.	0.	0.	2196.	0.
2023	3740.	9213.	776.	2068.	0.	0.	2213.	0.
2024	3709.	9727.	766.	2148.	0.	0.	2226.	0.
2025	3683.	10258.	756.	2229.	0.	0.	2231.	0.
2026	3666.	10811.	749.	2309.	0.	0.	2228.	0.
2027	3657.	11406.	745.	2389.	0.	0.	2221.	0.
2028	3651.	12025.	741.	2465.	0.	0.	2214.	0.
2029	3645.	12677.	741.	2542.	0.	0.	2211.	0.
2030	3642.	13348.	743.	2608.	0.	0.	2211.	0.
2031	3647.	14032.	746.	2672.	0.	0.	2214.	0.
2032	3661.	14735.	752.	2735.	0.	0.	2217.	0.
2033	3678.	15474.	759.	2795.	0.	0.	2219.	0.
2034	3694.	16241.	768.	2844.	0.	0.	2220.	0.
2035	3712.	17028.	778.	2893.	0.	0.	2219.	0.
2036	3735.	17839.	787.	2942.	0.	0.	2218.	0.
2037	3764.	18656.	798.	2990.	0.	0.	2217.	0.
2038	3796.	19497.	808.	3034.	0.	0.	2216.	0.
2039	3826.	20364.	816.	3079.	0.	0.	2216.	0.

1 2004 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	1689.	80736.
2003	0.	0.	1771.	84586.
2004	0.	0.	1831.	88432.
2005	0.	0.	1869.	92416.
2006	0.	0.	1888.	96446.
2007	0.	0.	1890.	100523.
2008	0.	0.	1874.	104556.
2009	0.	0.	1844.	108536.
2010	0.	0.	1799.	112541.
2011	0.	0.	1751.	116555.
2012	0.	0.	1707.	120640.
2013	0.	0.	1673.	124780.
2014	0.	0.	1652.	128908.
2015	0.	0.	1642.	132869.
2016	0.	0.	1642.	136635.
2017	0.	0.	1646.	140260.
2018	0.	0.	1652.	143653.
2019	0.	0.	1657.	146969.
2020	0.	0.	1660.	150219.
2021	0.	0.	1660.	153311.
2022	0.	0.	1658.	156235.
2023	0.	0.	1655.	159079.
2024	0.	0.	1651.	161780.
2025	0.	0.	1648.	164213.
2026	0.	0.	1645.	166419.
2027	0.	0.	1644.	168430.
2028	0.	0.	1645.	170218.
2029	0.	0.	1645.	171651.
2030	0.	0.	1647.	172869.
2031	0.	0.	1649.	173772.
2032	0.	0.	1651.	174420.
2033	0.	0.	1653.	174824.
2034	0.	0.	1655.	174825.
2035	0.	0.	1656.	174699.
2036	0.	0.	1656.	174482.
2037	0.	0.	1656.	174058.
2038	0.	0.	1656.	173587.
2039	0.	0.	1655.	173203.

1 2005 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	3310.	1702.	0.	27304.	15624.	12866.	4603.	3147.
2003	3434.	1789.	0.	27615.	16732.	14314.	4825.	3232.
2004	3559.	1878.	0.	27869.	17833.	15857.	5053.	3311.
2005	3682.	1966.	0.	28083.	18972.	17485.	5285.	3384.
2006	3823.	2052.	0.	28290.	20311.	19193.	5526.	3456.
2007	3967.	2139.	0.	28497.	21682.	20984.	5778.	3527.
2008	4115.	2227.	0.	28689.	23001.	22804.	6036.	3594.
2009	4254.	2318.	0.	28874.	24340.	24624.	6305.	3657.
2010	4397.	2411.	0.	29051.	25706.	26457.	6582.	3717.
2011	4540.	2501.	0.	29216.	27080.	28260.	6863.	3769.
2012	4683.	2586.	0.	29360.	28456.	30017.	7151.	3814.
2013	4828.	2670.	0.	29490.	29822.	31696.	7450.	3854.
2014	4974.	2753.	0.	29602.	31179.	33307.	7754.	3891.
2015	5122.	2839.	0.	29693.	32500.	34819.	8064.	3926.
2016	5272.	2929.	0.	29757.	33783.	36241.	8382.	3953.
2017	5421.	3014.	0.	29811.	35036.	37588.	8712.	3971.
2018	5571.	3097.	0.	29849.	36220.	38816.	9050.	3986.
2019	5719.	3178.	0.	29868.	37346.	40009.	9404.	3998.
2020	5869.	3256.	0.	29865.	38414.	41170.	9770.	4007.
2021	6018.	3333.	0.	29859.	39407.	42236.	10141.	4011.
2022	6169.	3414.	0.	29839.	40317.	43198.	10525.	4010.
2023	6318.	3497.	0.	29802.	41164.	44117.	10919.	4006.
2024	6467.	3580.	0.	29746.	41928.	44961.	11321.	4000.
2025	6614.	3663.	0.	29672.	42593.	45664.	11730.	3993.
2026	6760.	3741.	0.	29571.	43177.	46218.	12147.	3983.
2027	6904.	3817.	0.	29441.	43672.	46615.	12574.	3972.
2028	7048.	3889.	0.	29280.	44078.	46919.	13014.	3961.
2029	7192.	3963.	0.	29106.	44354.	46960.	13467.	3949.
2030	7334.	4037.	0.	28925.	44537.	46839.	13934.	3937.
2031	7474.	4110.	0.	28720.	44608.	46524.	14409.	3926.
2032	7612.	4179.	0.	28500.	44571.	46065.	14898.	3917.
2033	7746.	4246.	0.	28283.	44444.	45408.	15401.	3906.
2034	7876.	4299.	0.	28089.	44182.	44435.	15918.	3896.
2035	8006.	4360.	0.	27876.	43863.	43396.	16444.	3886.
2036	8132.	4422.	0.	27667.	43459.	42312.	16978.	3878.
2037	8255.	4483.	0.	27471.	42974.	41099.	17516.	3871.
2038	8374.	4540.	0.	27284.	42418.	39842.	18065.	3865.
2039	8488.	4594.	0.	27068.	41838.	38688.	18619.	3859.
2040	8596.	4632.	0.	26851.	41231.	37621.	19183.	3852.

1 2005 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	3512.	2429.	965.	594.	0.	0.	2991.	0.
2003	3615.	2610.	978.	636.	0.	0.	3035.	0.
2004	3711.	2802.	991.	681.	0.	0.	3056.	0.
2005	3798.	3003.	996.	729.	0.	0.	3043.	0.
2006	3871.	3217.	995.	779.	0.	0.	2988.	0.
2007	3927.	3449.	993.	836.	0.	0.	2877.	0.
2008	3972.	3696.	987.	896.	0.	0.	2685.	0.
2009	4013.	3960.	976.	959.	0.	0.	2407.	0.
2010	4051.	4237.	965.	1023.	0.	0.	2088.	0.
2011	4072.	4521.	952.	1090.	0.	0.	1825.	0.
2012	4072.	4818.	937.	1160.	0.	0.	1707.	0.
2013	4063.	5131.	922.	1231.	0.	0.	1746.	0.
2014	4051.	5463.	906.	1307.	0.	0.	1877.	0.
2015	4033.	5808.	890.	1387.	0.	0.	2012.	0.
2016	4004.	6168.	874.	1467.	0.	0.	2092.	0.
2017	3963.	6552.	858.	1548.	0.	0.	2104.	0.
2018	3921.	6952.	842.	1633.	0.	0.	2072.	0.
2019	3881.	7375.	826.	1723.	0.	0.	2025.	0.
2020	3840.	7812.	810.	1812.	0.	0.	1988.	0.
2021	3802.	8261.	796.	1900.	0.	0.	1972.	0.
2022	3768.	8727.	780.	1987.	0.	0.	1978.	0.
2023	3736.	9217.	767.	2069.	0.	0.	1994.	0.
2024	3705.	9732.	755.	2149.	0.	0.	2012.	0.
2025	3678.	10263.	743.	2230.	0.	0.	2021.	0.
2026	3661.	10816.	734.	2310.	0.	0.	2021.	0.
2027	3652.	11412.	728.	2390.	0.	0.	2014.	0.
2028	3645.	12032.	722.	2467.	0.	0.	2007.	0.
2029	3639.	12684.	720.	2544.	0.	0.	2001.	0.
2030	3635.	13355.	720.	2610.	0.	0.	2000.	0.
2031	3640.	14041.	722.	2674.	0.	0.	2001.	0.
2032	3654.	14745.	727.	2738.	0.	0.	2005.	0.
2033	3669.	15485.	734.	2798.	0.	0.	2008.	0.
2034	3686.	16254.	743.	2848.	0.	0.	2010.	0.
2035	3703.	17043.	752.	2897.	0.	0.	2009.	0.
2036	3725.	17855.	762.	2946.	0.	0.	2008.	0.
2037	3754.	18674.	773.	2995.	0.	0.	2007.	0.
2038	3785.	19516.	784.	3040.	0.	0.	2006.	0.
2039	3814.	20384.	794.	3085.	0.	0.	2005.	0.
2040	3839.	21286.	804.	3129.	0.	0.	2006.	0.

1 2005 REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	1689.	80736.
2003	0.	0.	1771.	84586.
2004	0.	0.	1831.	88432.
2005	0.	0.	1867.	92294.
2006	0.	0.	1884.	96385.
2007	0.	0.	1883.	100537.
2008	0.	0.	1864.	104567.
2009	0.	0.	1829.	108518.
2010	0.	0.	1778.	112462.
2011	0.	0.	1721.	116411.
2012	0.	0.	1668.	120430.
2013	0.	0.	1626.	124527.
2014	0.	0.	1599.	128663.
2015	0.	0.	1586.	132678.
2016	0.	0.	1584.	136505.
2017	0.	0.	1588.	140166.
2018	0.	0.	1595.	143604.
2019	0.	0.	1601.	146953.
2020	0.	0.	1606.	150218.
2021	0.	0.	1607.	153345.
2022	0.	0.	1605.	156316.
2023	0.	0.	1602.	159207.
2024	0.	0.	1598.	161954.
2025	0.	0.	1594.	164457.
2026	0.	0.	1591.	166731.
2027	0.	0.	1590.	168783.
2028	0.	0.	1590.	170652.
2029	0.	0.	1591.	172170.
2030	0.	0.	1592.	173457.
2031	0.	0.	1595.	174445.
2032	0.	0.	1597.	175207.
2033	0.	0.	1599.	175727.
2034	0.	0.	1601.	175836.
2035	0.	0.	1602.	175837.
2036	0.	0.	1603.	175747.
2037	0.	0.	1603.	175475.
2038	0.	0.	1602.	175121.
2039	0.	0.	1602.	174838.
2040	0.	0.	1601.	174630.

1 FUTURE REPLACEMENTS FOR YEAR 2002:

YEAR	2001 DOLLARS	2002 DOLLARS
2002	80736.	
2003	84682.	85275.
2004	88698.	89319.
2005	92781.	93431.
2006	96902.	97580.
2007	101112.	101820.
2008	105335.	106072.
2009	109573.	110340.
2010	113877.	114674.
2011	118175.	119002.
2012	122452.	123309.
2013	126662.	127548.
2014	130784.	131700.
2015	134746.	135689.
2016	138553.	139523.
2017	142249.	143245.
2018	145748.	146768.
2019	149186.	150230.
2020	152545.	153613.
2021	155736.	156826.
2022	158760.	159871.
2023	161699.	162831.
2024	164488.	165639.
2025	167035.	168205.
2026	169372.	170558.
2027	171502.	172702.
2028	173421.	174635.
2029	175000.	176225.
2030	176356.	177590.
2031	177384.	178626.
2032	178163.	179410.
2033	178699.	179949.
2034	178824.	180075.
2035	178802.	180054.
2036	178672.	179923.
2037	178348.	179596.

1 FUTURE REPLACEMENTS FOR YEAR 2003:

YEAR	2001 DOLLARS	2003 DOLLARS
2002	80736.	
2003	84586.	
2004	88520.	90998.
2005	92548.	95139.
2006	96602.	99307.
2007	100728.	103549.
2008	104829.	107765.
2009	108911.	111961.
2010	113046.	116211.
2011	117201.	120483.
2012	121402.	124801.
2013	125596.	129113.
2014	129722.	133354.
2015	133663.	137405.
2016	137431.	141279.
2017	141071.	145021.
2018	144494.	148540.
2019	147858.	151998.
2020	151151.	155383.
2021	154278.	158597.
2022	157234.	161636.
2023	160112.	164595.
2024	162837.	167396.
2025	165297.	169925.
2026	167551.	172242.
2027	169598.	174347.
2028	171421.	176221.
2029	172901.	177742.
2030	174165.	179041.
2031	175101.	180004.
2032	175782.	180704.
2033	176225.	181159.
2034	176257.	181192.
2035	176162.	181095.
2036	175958.	180885.
2037	175556.	180471.
2038	175112.	180015.

1 FUTURE REPLACEMENTS FOR YEAR 2004:

YEAR	2001 DOLLARS	2004 DOLLARS
2002	80736.	
2003	84586.	
2004	88432.	
2005	92416.	97222.
2006	96446.	101461.
2007	100523.	105750.
2008	104556.	109993.
2009	108536.	114180.
2010	112541.	118393.
2011	116555.	122616.
2012	120640.	126913.
2013	124780.	131268.
2014	128908.	135612.
2015	132869.	139778.
2016	136635.	143740.
2017	140260.	147554.
2018	143653.	151123.
2019	146969.	154611.
2020	150219.	158030.
2021	153311.	161283.
2022	156235.	164359.
2023	159079.	167351.
2024	161780.	170193.
2025	164213.	172752.
2026	166419.	175073.
2027	168430.	177189.
2028	170218.	179070.
2029	171651.	180577.
2030	172869.	181858.
2031	173772.	182808.
2032	174420.	183490.
2033	174824.	183915.
2034	174825.	183916.
2035	174699.	183784.
2036	174482.	183556.
2037	174058.	183109.
2038	173587.	182614.
2039	173203.	182210.

1 FUTURE REPLACEMENTS FOR YEAR 2005:

YEAR	2001 DOLLARS	2005 DOLLARS
2002	80736.	
2003	84586.	
2004	88432.	
2005	92294.	
2006	96385.	103807.
2007	100537.	108279.
2008	104567.	112618.
2009	108518.	116874.
2010	112462.	121121.
2011	116411.	125375.
2012	120430.	129703.
2013	124527.	134116.
2014	128663.	138570.
2015	132678.	142895.
2016	136505.	147016.
2017	140166.	150959.
2018	143604.	154661.
2019	146953.	158269.
2020	150218.	161785.
2021	153345.	165153.
2022	156316.	168352.
2023	159207.	171466.
2024	161954.	174425.
2025	164457.	177121.
2026	166731.	179569.
2027	168783.	181779.
2028	170652.	183792.
2029	172170.	185427.
2030	173457.	186813.
2031	174445.	187877.
2032	175207.	188698.
2033	175727.	189258.
2034	175836.	189376.
2035	175837.	189377.
2036	175747.	189279.
2037	175475.	188986.
2038	175121.	188606.
2039	174838.	188301.
2040	174630.	188077.

AC INTERTIE REPLACEMENTS

AC PLANT INVESTMENT BY YEAR AND ACCOUNT

YEAR	R2	R3	SQ	S0	R2	R3	R3	R2
	60	60	40	39	34	34	100	50
	1	1	2	2	2	2	3	4
1951	0.	0.	0.	17.	0.	0.	0.	0.
1952	0.	0.	0.	24.	0.	0.	0.	0.
1953	332.	177.	0.	896.	0.	0.	0.	0.
1954	18.	0.	0.	0.	0.	0.	0.	0.
1955	30.	6.	0.	48.	0.	0.	0.	0.
1956	208.	207.	0.	796.	0.	0.	0.	0.
1957	47.	1.	0.	21.	0.	0.	0.	0.
1958	7.	5.	0.	1430.	0.	0.	0.	0.
1959	28.	0.	0.	288.	0.	0.	0.	0.
1960	0.	0.	0.	24.	0.	0.	0.	0.
1961	0.	0.	0.	6.	0.	0.	0.	0.
1962	98.	0.	0.	6.	0.	0.	0.	0.
1963	0.	0.	0.	68.	0.	0.	0.	0.
1964	0.	0.	0.	25.	0.	0.	0.	0.
1965	0.	0.	0.	7.	0.	0.	0.	0.
1966	14.	8.	0.	334.	0.	0.	0.	0.
1967	26.	0.	0.	1.	0.	0.	0.	0.
1968	336.	211.	0.	1582.	0.	0.	9437.	0.
1969	207.	131.	0.	2617.	0.	0.	0.	0.
1970	1.	1.	0.	1460.	0.	0.	0.	0.
1971	0.	0.	0.	0.	323.	323.	0.	0.
1972	238.	193.	0.	0.	2389.	2389.	0.	0.
1973	0.	0.	0.	0.	68.	68.	0.	0.
1974	0.	0.	0.	0.	62.	62.	0.	0.
1975	46.	46.	0.	0.	429.	429.	47.	0.
1976	22.	22.	0.	0.	33.	33.	0.	0.
1977	49.	49.	0.	0.	888.	888.	0.	0.
1978	8.	0.	0.	0.	89.	89.	0.	0.
1979	0.	0.	0.	0.	186.	186.	0.	0.
1980	63.	1.	0.	0.	-2.	-2.	0.	0.
1981	0.	0.	0.	0.	75.	75.	0.	0.
1982	6.	6.	0.	0.	243.	243.	0.	0.
1983	1206.	1203.	0.	0.	5648.	5648.	26649.	0.
1984	252.	58.	0.	0.	24.	24.	46.	0.
1985	16.	16.	0.	0.	28.	28.	0.	0.
1986	79.	0.	0.	0.	407.	407.	0.	0.
1987	366.	316.	0.	0.	6.	6.	90.	0.
1988	38.	0.	0.	0.	1834.	1834.	0.	0.
1989	2548.	2548.	0.	0.	2848.	2848.	0.	0.
1990	152.	152.	0.	0.	336.	336.	0.	0.
1991	167.	167.	0.	0.	100.	100.	0.	0.
1992	879.	879.	0.	0.	21303.	21303.	10214.	0.
1993	235.	88.	0.	0.	4545.	4545.	10041.	864.
1994	3358.	3158.	0.	0.	29178.	29178.	4326.	0.
1995	183.	183.	0.	0.	3137.	3137.	0.	0.
1996	133.	85.	0.	0.	2386.	2386.	0.	0.
1997	23.	23.	0.	0.	386.	386.	0.	0.
1998	0.	0.	0.	0.	1503.	1503.	0.	0.
1999	31.	0.	0.	0.	578.	578.	0.	0.
2000	1.	1.	0.	0.	1653.	1653.	0.	0.
2001	2.	2.	0.	0.	3105.	3105.	0.	0.
2002	123.	107.	0.	104.	900.	900.	653.	9.

2003	120.	104.	0.	101.	879.	879.	638.	9.
2004	98.	85.	0.	83.	718.	718.	521.	7.
2005	63.	55.	0.	53.	461.	461.	335.	5.

AC PLANT INVESTMENT BY YEAR AND ACCOUNT

YEAR	R3	R4	S3	R4	SQ	SQ	L3	SQ
	50	100	30	75	20	5	10	15
	4	5	1	1	1	1	1	1
1951	0.	0.	0.	0.	0.	0.	0.	0.
1952	0.	0.	0.	0.	0.	0.	0.	0.
1953	0.	0.	0.	0.	0.	0.	0.	0.
1954	0.	0.	0.	0.	0.	0.	0.	0.
1955	0.	0.	0.	0.	0.	0.	0.	0.
1956	0.	0.	0.	0.	0.	0.	0.	0.
1957	0.	0.	0.	0.	0.	0.	0.	0.
1958	0.	0.	0.	0.	0.	0.	0.	0.
1959	0.	0.	0.	0.	0.	0.	0.	0.
1960	0.	0.	0.	0.	0.	0.	0.	0.
1961	0.	0.	0.	0.	0.	0.	0.	0.
1962	0.	0.	0.	0.	0.	0.	0.	0.
1963	0.	0.	0.	0.	0.	0.	0.	0.
1964	0.	0.	0.	0.	0.	0.	0.	0.
1965	0.	0.	0.	0.	0.	0.	0.	0.
1966	0.	0.	0.	0.	0.	0.	0.	0.
1967	0.	0.	0.	0.	0.	0.	0.	0.
1968	0.	9266.	0.	411.	0.	0.	0.	0.
1969	0.	0.	0.	0.	0.	0.	0.	0.
1970	0.	0.	0.	0.	0.	0.	0.	0.
1971	0.	0.	0.	0.	0.	0.	0.	0.
1972	0.	0.	0.	0.	0.	0.	0.	0.
1973	0.	0.	0.	0.	0.	0.	0.	0.
1974	0.	0.	0.	0.	0.	0.	0.	0.
1975	0.	0.	0.	0.	0.	0.	0.	0.
1976	0.	0.	0.	0.	0.	0.	0.	0.
1977	0.	0.	0.	0.	0.	0.	0.	0.
1978	0.	0.	0.	0.	0.	0.	0.	0.
1979	0.	0.	0.	0.	0.	0.	0.	0.
1980	0.	0.	0.	0.	0.	0.	0.	0.
1981	0.	52.	0.	0.	0.	0.	0.	0.
1982	0.	0.	0.	0.	0.	0.	0.	0.
1983	0.	23009.	0.	220.	0.	0.	0.	0.
1984	0.	6.	0.	0.	0.	0.	0.	0.
1985	0.	0.	0.	0.	0.	0.	0.	0.
1986	0.	38.	0.	0.	0.	0.	0.	0.
1987	0.	26.	0.	0.	0.	0.	0.	72.
1988	0.	0.	0.	0.	0.	0.	0.	235.
1989	0.	0.	0.	0.	0.	0.	0.	307.
1990	0.	82.	0.	0.	0.	0.	0.	2299.
1991	0.	0.	0.	0.	0.	0.	0.	142.
1992	0.	13250.	0.	1696.	0.	0.	0.	1390.
1993	864.	17281.	0.	3547.	0.	0.	0.	1059.
1994	0.	2779.	0.	0.	0.	0.	0.	6317.
1995	0.	0.	0.	0.	0.	0.	0.	699.
1996	0.	0.	0.	0.	0.	0.	0.	2520.
1997	0.	0.	0.	0.	0.	0.	0.	557.
1998	0.	0.	0.	0.	0.	0.	0.	414.
1999	0.	0.	0.	0.	0.	0.	0.	1971.
2000	0.	0.	0.	0.	0.	0.	0.	126.
2001	0.	25.	0.	0.	0.	0.	0.	41.

2002	9.	707.	0.	63.	0.	0.	0.	195.
2003	9.	690.	0.	62.	0.	0.	0.	190.
2004	7.	564.	0.	50.	0.	0.	0.	155.
2005	5.	362.	0.	32.	0.	0.	0.	100.

AC PLANT INVESTMENT BY YEAR AND ACCOUNT

YEAR	SQ 30 1	SQ 25 1	L2 15 1	
1951	0.	0.	0.	17.
1952	0.	0.	0.	24.
1953	0.	0.	0.	1405.
1954	0.	0.	0.	18.
1955	0.	0.	0.	84.
1956	0.	0.	0.	1211.
1957	0.	0.	0.	69.
1958	0.	0.	0.	1442.
1959	0.	0.	0.	316.
1960	0.	0.	0.	24.
1961	0.	0.	0.	6.
1962	0.	0.	0.	104.
1963	0.	0.	0.	68.
1964	0.	0.	0.	25.
1965	0.	0.	0.	7.
1966	0.	0.	0.	356.
1967	0.	0.	0.	27.
1968	0.	0.	0.	21243.
1969	0.	0.	0.	2955.
1970	0.	0.	0.	1462.
1971	0.	0.	0.	646.
1972	0.	0.	0.	5209.
1973	0.	0.	0.	136.
1974	0.	0.	0.	124.
1975	0.	0.	0.	997.
1976	0.	0.	0.	110.
1977	0.	0.	0.	1874.
1978	0.	0.	0.	186.
1979	0.	0.	0.	372.
1980	0.	0.	0.	60.
1981	0.	0.	0.	202.
1982	0.	0.	0.	498.
1983	0.	0.	0.	63583.
1984	0.	0.	0.	410.
1985	0.	0.	0.	88.
1986	0.	0.	0.	931.
1987	0.	0.	0.	882.
1988	0.	0.	0.	3941.
1989	0.	0.	0.	11099.
1990	0.	0.	0.	3357.
1991	0.	0.	0.	676.
1992	0.	0.	0.	70914.
1993	0.	0.	0.	43069.
1994	0.	0.	0.	78294.
1995	0.	0.	0.	7339.
1996	0.	0.	0.	7510.
1997	0.	0.	0.	1375.
1998	0.	0.	0.	3420.
1999	0.	0.	0.	3158.
2000	0.	0.	0.	3434.
2001	0.	0.	0.	6280.
2002	0.	0.	0.	3769.
2003	0.	0.	0.	3682.

2004	0.	0.	0.	3007.
2005	0.	0.	0.	1932.

AC INTERTIE COST-EVALUATION PERIOD DATA:

YEAR	PLANT INVESTMENT	ESCALATION FACTOR
2002	3769.	1.00700
2003	3682.	1.02800
2004	3007.	1.05200
2005	1932.	1.07700

AC INTERTIE FUTURE REPLACEMENTS FOR YEAR 2002:

YEAR	2001 DOLLARS	2002 DOLLARS
2002	3621.	
2003	3853.	3880.
2004	4094.	4123.
2005	4343.	4373.
2006	4599.	4631.
2007	4868.	4902.
2008	5138.	5174.
2009	5405.	5443.
2010	5685.	5725.
2011	5971.	6012.
2012	6237.	6281.
2013	6509.	6555.
2014	6793.	6841.
2015	7081.	7131.
2016	7360.	7411.
2017	7652.	7706.
2018	7961.	8017.
2019	8286.	8344.
2020	8611.	8671.
2021	8950.	9013.
2022	9302.	9367.
2023	9632.	9700.
2024	9976.	10046.
2025	10303.	10375.
2026	10610.	10685.
2027	10886.	10963.
2028	11130.	11208.
2029	11329.	11408.
2030	11500.	11580.
2031	11609.	11690.
2032	11630.	11711.
2033	11628.	11710.
2034	11541.	11622.
2035	11407.	11487.
2036	11241.	11320.
2037	11039.	11117.

2002 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	152.	75.	0.	1179.	1173.	896.	107.	4.
2003	159.	80.	0.	1194.	1261.	1004.	114.	4.
2004	165.	85.	0.	1209.	1350.	1117.	121.	4.
2005	171.	91.	0.	1224.	1442.	1233.	129.	4.
2006	178.	97.	0.	1238.	1537.	1354.	137.	5.
2007	184.	103.	0.	1252.	1638.	1483.	144.	5.
2008	191.	110.	0.	1265.	1741.	1611.	152.	5.
2009	198.	116.	0.	1279.	1844.	1732.	162.	5.
2010	205.	123.	0.	1291.	1953.	1861.	171.	6.
2011	213.	130.	0.	1303.	2065.	1992.	180.	6.
2012	220.	137.	0.	1314.	2174.	2108.	190.	6.
2013	227.	144.	0.	1325.	2286.	2227.	199.	7.
2014	235.	151.	0.	1334.	2401.	2350.	210.	7.
2015	242.	158.	0.	1343.	2517.	2478.	220.	7.
2016	250.	166.	0.	1351.	2629.	2600.	231.	8.
2017	257.	173.	0.	1359.	2745.	2733.	242.	8.
2018	265.	180.	0.	1366.	2863.	2881.	253.	9.
2019	273.	187.	0.	1371.	2976.	3047.	265.	9.
2020	280.	194.	0.	1376.	3090.	3214.	278.	10.
2021	287.	201.	0.	1380.	3205.	3394.	290.	10.
2022	295.	208.	0.	1382.	3321.	3587.	303.	11.
2023	302.	214.	0.	1383.	3431.	3767.	315.	11.
2024	310.	221.	0.	1383.	3539.	3957.	329.	12.
2025	317.	228.	0.	1382.	3644.	4134.	343.	12.
2026	324.	233.	0.	1378.	3744.	4300.	357.	13.
2027	330.	238.	0.	1373.	3836.	4445.	371.	13.
2028	337.	244.	0.	1367.	3921.	4564.	386.	14.
2029	344.	250.	0.	1359.	3993.	4648.	401.	15.
2030	350.	256.	0.	1351.	4053.	4716.	417.	15.
2031	357.	262.	0.	1340.	4101.	4737.	433.	16.
2032	362.	267.	0.	1328.	4130.	4693.	449.	17.
2033	368.	271.	0.	1316.	4154.	4630.	465.	17.
2034	373.	276.	0.	1306.	4153.	4495.	484.	18.
2035	378.	283.	0.	1296.	4136.	4328.	503.	19.
2036	383.	289.	0.	1287.	4107.	4141.	522.	19.
2037	388.	295.	0.	1279.	4064.	3932.	540.	20.

2002 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	1.	30.	0.	4.	0.	0.	0.	0.
2003	1.	32.	0.	5.	0.	0.	0.	0.
2004	2.	36.	0.	5.	0.	0.	0.	0.
2005	2.	40.	0.	6.	0.	0.	0.	0.
2006	2.	44.	0.	7.	0.	0.	0.	0.
2007	2.	48.	0.	7.	0.	0.	0.	0.
2008	3.	52.	0.	8.	0.	0.	0.	0.
2009	3.	57.	0.	9.	0.	0.	0.	0.
2010	3.	62.	0.	10.	0.	0.	0.	0.
2011	4.	67.	0.	11.	0.	0.	0.	0.
2012	4.	73.	0.	12.	0.	0.	0.	0.
2013	4.	78.	0.	13.	0.	0.	0.	0.
2014	5.	86.	0.	14.	0.	0.	0.	0.
2015	5.	94.	0.	16.	0.	0.	0.	0.
2016	6.	102.	0.	17.	0.	0.	0.	0.
2017	6.	110.	0.	18.	0.	0.	0.	0.
2018	7.	119.	0.	20.	0.	0.	0.	0.
2019	7.	129.	0.	22.	0.	0.	0.	0.
2020	8.	139.	0.	24.	0.	0.	0.	0.
2021	8.	149.	0.	26.	0.	0.	0.	0.
2022	9.	159.	0.	28.	0.	0.	0.	0.
2023	10.	169.	0.	30.	0.	0.	0.	0.
2024	10.	183.	0.	32.	0.	0.	0.	0.
2025	11.	198.	0.	34.	0.	0.	0.	0.
2026	12.	212.	0.	37.	0.	0.	0.	0.
2027	13.	226.	0.	39.	0.	0.	0.	0.
2028	13.	241.	0.	43.	0.	0.	0.	0.
2029	14.	259.	0.	46.	0.	0.	0.	0.
2030	15.	276.	0.	49.	0.	0.	0.	0.
2031	16.	294.	0.	52.	0.	0.	0.	0.
2032	17.	312.	0.	55.	0.	0.	0.	0.
2033	19.	330.	0.	59.	0.	0.	0.	0.
2034	20.	352.	0.	64.	0.	0.	0.	0.
2035	21.	374.	0.	69.	0.	0.	0.	0.
2036	22.	396.	0.	74.	0.	0.	0.	0.
2037	24.	419.	0.	79.	0.	0.	0.	0.

2002 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	0.	3621.
2003	0.	0.	0.	3853.
2004	0.	0.	0.	4094.
2005	0.	0.	0.	4343.
2006	0.	0.	0.	4599.
2007	0.	0.	0.	4868.
2008	0.	0.	0.	5138.
2009	0.	0.	0.	5405.
2010	0.	0.	0.	5685.
2011	0.	0.	0.	5971.
2012	0.	0.	0.	6237.
2013	0.	0.	0.	6509.
2014	0.	0.	0.	6793.
2015	0.	0.	0.	7081.
2016	0.	0.	0.	7360.
2017	0.	0.	0.	7652.
2018	0.	0.	0.	7961.
2019	0.	0.	0.	8286.
2020	0.	0.	0.	8611.
2021	0.	0.	0.	8950.
2022	0.	0.	0.	9302.
2023	0.	0.	0.	9632.
2024	0.	0.	0.	9976.
2025	0.	0.	0.	10303.
2026	0.	0.	0.	10610.
2027	0.	0.	0.	10886.
2028	0.	0.	0.	11130.
2029	0.	0.	0.	11329.
2030	0.	0.	0.	11500.
2031	0.	0.	0.	11609.
2032	0.	0.	0.	11630.
2033	0.	0.	0.	11628.
2034	0.	0.	0.	11541.
2035	0.	0.	0.	11407.
2036	0.	0.	0.	11241.
2037	0.	0.	0.	11039.

FUTURE AC INTERTIE REPLACEMENTS FOR YEAR 2003:

YEAR	2001 DOLLARS	2003 DOLLARS
2002	3621.	
2003	3851.	
2004	4088.	4202.
2005	4333.	4454.
2006	4587.	4716.
2007	4855.	4991.
2008	5123.	5266.
2009	5387.	5538.
2010	5666.	5824.
2011	5949.	6115.
2012	6213.	6387.
2013	6483.	6664.
2014	6764.	6954.
2015	7050.	7247.
2016	7326.	7531.
2017	7616.	7829.
2018	7922.	8143.
2019	8244.	8475.
2020	8565.	8805.
2021	8902.	9151.
2022	9250.	9509.
2023	9577.	9845.
2024	9917.	10195.
2025	10240.	10527.
2026	10543.	10838.
2027	10815.	11118.
2028	11054.	11364.
2029	11248.	11563.
2030	11414.	11734.
2031	11518.	11840.
2032	11534.	11857.
2033	11527.	11850.
2034	11435.	11755.
2035	11296.	11612.
2036	11125.	11437.
2037	10919.	11225.
2038	10669.	10968.

2003 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	152.	75.	0.	1179.	1173.	896.	107.	4.
2003	158.	80.	0.	1194.	1259.	1004.	114.	4.
2004	165.	85.	0.	1207.	1346.	1117.	121.	4.
2005	171.	91.	0.	1220.	1437.	1232.	129.	4.
2006	178.	97.	0.	1233.	1532.	1353.	137.	5.
2007	184.	103.	0.	1246.	1632.	1482.	144.	5.
2008	191.	110.	0.	1258.	1735.	1609.	152.	5.
2009	198.	116.	0.	1270.	1837.	1730.	161.	5.
2010	205.	123.	0.	1282.	1945.	1859.	171.	6.
2011	212.	130.	0.	1293.	2057.	1989.	180.	6.
2012	219.	137.	0.	1303.	2165.	2105.	190.	6.
2013	227.	144.	0.	1313.	2276.	2223.	199.	7.
2014	234.	151.	0.	1322.	2391.	2345.	210.	7.
2015	242.	158.	0.	1330.	2506.	2472.	220.	7.
2016	249.	165.	0.	1337.	2617.	2594.	231.	8.
2017	257.	173.	0.	1344.	2732.	2726.	242.	8.
2018	264.	180.	0.	1350.	2848.	2873.	253.	9.
2019	272.	187.	0.	1355.	2961.	3038.	265.	9.
2020	279.	194.	0.	1359.	3073.	3203.	278.	10.
2021	287.	201.	0.	1362.	3187.	3382.	290.	10.
2022	294.	208.	0.	1364.	3302.	3574.	303.	11.
2023	302.	214.	0.	1364.	3410.	3753.	315.	11.
2024	309.	221.	0.	1363.	3517.	3941.	329.	12.
2025	316.	227.	0.	1361.	3621.	4116.	343.	12.
2026	323.	233.	0.	1358.	3719.	4281.	357.	13.
2027	330.	238.	0.	1352.	3809.	4424.	371.	13.
2028	336.	244.	0.	1345.	3892.	4541.	386.	14.
2029	343.	250.	0.	1337.	3962.	4622.	401.	15.
2030	349.	256.	0.	1328.	4021.	4687.	417.	15.
2031	356.	261.	0.	1316.	4067.	4706.	433.	16.
2032	361.	266.	0.	1304.	4094.	4658.	449.	17.
2033	366.	271.	0.	1291.	4116.	4593.	465.	17.
2034	372.	276.	0.	1281.	4114.	4455.	484.	18.
2035	377.	282.	0.	1271.	4094.	4286.	503.	19.
2036	382.	289.	0.	1260.	4064.	4097.	521.	19.
2037	387.	295.	0.	1252.	4019.	3885.	540.	20.
2038	391.	301.	0.	1242.	3956.	3649.	559.	21.

2003 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	1.	30.	0.	4.	0.	0.	0.	0.
2003	1.	32.	0.	5.	0.	0.	0.	0.
2004	2.	36.	0.	5.	0.	0.	0.	0.
2005	2.	40.	0.	6.	0.	0.	0.	0.
2006	2.	44.	0.	7.	0.	0.	0.	0.
2007	2.	48.	0.	7.	0.	0.	0.	0.
2008	3.	52.	0.	8.	0.	0.	0.	0.
2009	3.	57.	0.	9.	0.	0.	0.	0.
2010	3.	62.	0.	10.	0.	0.	0.	0.
2011	4.	67.	0.	11.	0.	0.	0.	0.
2012	4.	73.	0.	12.	0.	0.	0.	0.
2013	4.	78.	0.	13.	0.	0.	0.	0.
2014	5.	86.	0.	14.	0.	0.	0.	0.
2015	5.	94.	0.	16.	0.	0.	0.	0.
2016	6.	102.	0.	17.	0.	0.	0.	0.
2017	6.	110.	0.	18.	0.	0.	0.	0.
2018	7.	119.	0.	20.	0.	0.	0.	0.
2019	7.	129.	0.	22.	0.	0.	0.	0.
2020	8.	139.	0.	24.	0.	0.	0.	0.
2021	8.	149.	0.	26.	0.	0.	0.	0.
2022	9.	159.	0.	28.	0.	0.	0.	0.
2023	10.	169.	0.	30.	0.	0.	0.	0.
2024	10.	183.	0.	32.	0.	0.	0.	0.
2025	11.	198.	0.	34.	0.	0.	0.	0.
2026	12.	212.	0.	37.	0.	0.	0.	0.
2027	13.	226.	0.	39.	0.	0.	0.	0.
2028	13.	241.	0.	43.	0.	0.	0.	0.
2029	14.	258.	0.	46.	0.	0.	0.	0.
2030	15.	276.	0.	49.	0.	0.	0.	0.
2031	16.	294.	0.	52.	0.	0.	0.	0.
2032	17.	312.	0.	55.	0.	0.	0.	0.
2033	19.	329.	0.	59.	0.	0.	0.	0.
2034	20.	352.	0.	64.	0.	0.	0.	0.
2035	21.	374.	0.	69.	0.	0.	0.	0.
2036	22.	396.	0.	74.	0.	0.	0.	0.
2037	24.	419.	0.	79.	0.	0.	0.	0.
2038	25.	442.	0.	84.	0.	0.	0.	0.

2003 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	0.	3621.
2003	0.	0.	0.	3851.
2004	0.	0.	0.	4088.
2005	0.	0.	0.	4333.
2006	0.	0.	0.	4587.
2007	0.	0.	0.	4855.
2008	0.	0.	0.	5123.
2009	0.	0.	0.	5387.
2010	0.	0.	0.	5666.
2011	0.	0.	0.	5949.
2012	0.	0.	0.	6213.
2013	0.	0.	0.	6483.
2014	0.	0.	0.	6764.
2015	0.	0.	0.	7050.
2016	0.	0.	0.	7326.
2017	0.	0.	0.	7616.
2018	0.	0.	0.	7922.
2019	0.	0.	0.	8244.
2020	0.	0.	0.	8565.
2021	0.	0.	0.	8902.
2022	0.	0.	0.	9250.
2023	0.	0.	0.	9577.
2024	0.	0.	0.	9917.
2025	0.	0.	0.	10240.
2026	0.	0.	0.	10543.
2027	0.	0.	0.	10815.
2028	0.	0.	0.	11054.
2029	0.	0.	0.	11248.
2030	0.	0.	0.	11414.
2031	0.	0.	0.	11518.
2032	0.	0.	0.	11534.
2033	0.	0.	0.	11527.
2034	0.	0.	0.	11435.
2035	0.	0.	0.	11296.
2036	0.	0.	0.	11125.
2037	0.	0.	0.	10919.
2038	0.	0.	0.	10669.

FUTURE AC INTERTIE REPLACEMENTS FOR YEAR 2004:

YEAR	2001 DOLLARS	2004 DOLLARS
2002	3621.	
2003	3851.	
2004	4085.	
2005	4326.	4551.
2006	4577.	4815.
2007	4842.	5094.
2008	5108.	5374.
2009	5370.	5650.
2010	5646.	5940.
2011	5927.	6235.
2012	6189.	6511.
2013	6456.	6792.
2014	6735.	7085.
2015	7018.	7383.
2016	7291.	7670.
2017	7578.	7972.
2018	7881.	8290.
2019	8200.	8626.
2020	8518.	8961.
2021	8850.	9311.
2022	9195.	9674.
2023	9518.	10013.
2024	9854.	10367.
2025	10173.	10702.
2026	10472.	11016.
2027	10739.	11297.
2028	10973.	11543.
2029	11161.	11742.
2030	11321.	11910.
2031	11419.	12013.
2032	11429.	12023.
2033	11416.	12010.
2034	11317.	11906.
2035	11172.	11753.
2036	10996.	11567.
2037	10784.	11345.
2038	10529.	11076.
2039	10298.	10833.

2004 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	152.	75.	0.	1179.	1173.	896.	107.	4.
2003	158.	80.	0.	1194.	1259.	1004.	114.	4.
2004	164.	85.	0.	1207.	1344.	1116.	121.	4.
2005	171.	91.	0.	1218.	1433.	1232.	129.	4.
2006	177.	97.	0.	1230.	1527.	1352.	137.	5.
2007	184.	103.	0.	1241.	1626.	1481.	144.	5.
2008	191.	109.	0.	1252.	1728.	1608.	152.	5.
2009	197.	116.	0.	1263.	1830.	1728.	161.	5.
2010	204.	123.	0.	1273.	1937.	1856.	171.	6.
2011	212.	130.	0.	1283.	2048.	1987.	180.	6.
2012	219.	137.	0.	1292.	2156.	2101.	190.	6.
2013	226.	144.	0.	1301.	2266.	2218.	199.	7.
2014	234.	151.	0.	1309.	2380.	2340.	210.	7.
2015	241.	158.	0.	1317.	2493.	2466.	220.	7.
2016	249.	165.	0.	1323.	2603.	2587.	231.	8.
2017	256.	172.	0.	1329.	2717.	2718.	241.	8.
2018	264.	180.	0.	1335.	2833.	2864.	252.	9.
2019	271.	187.	0.	1339.	2944.	3027.	265.	9.
2020	279.	194.	0.	1342.	3055.	3192.	277.	10.
2021	286.	200.	0.	1344.	3168.	3369.	290.	10.
2022	294.	207.	0.	1345.	3281.	3560.	302.	11.
2023	301.	214.	0.	1345.	3388.	3737.	315.	11.
2024	308.	220.	0.	1343.	3493.	3923.	329.	12.
2025	315.	227.	0.	1341.	3595.	4097.	343.	12.
2026	322.	232.	0.	1337.	3692.	4259.	357.	13.
2027	329.	238.	0.	1330.	3780.	4400.	371.	13.
2028	335.	243.	0.	1323.	3861.	4514.	385.	14.
2029	342.	249.	0.	1314.	3929.	4593.	401.	15.
2030	348.	255.	0.	1305.	3986.	4655.	417.	15.
2031	354.	261.	0.	1293.	4029.	4671.	433.	16.
2032	360.	266.	0.	1279.	4054.	4620.	449.	17.
2033	365.	270.	0.	1266.	4074.	4551.	465.	17.
2034	371.	275.	0.	1256.	4069.	4410.	484.	18.
2035	376.	282.	0.	1245.	4048.	4237.	502.	19.
2036	381.	288.	0.	1234.	4016.	4045.	521.	19.
2037	386.	294.	0.	1225.	3969.	3831.	540.	20.
2038	390.	300.	0.	1214.	3904.	3591.	559.	21.
2039	393.	306.	0.	1206.	3824.	3383.	580.	21.

2004 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	1.	30.	0.	4.	0.	0.	0.	0.
2003	1.	32.	0.	5.	0.	0.	0.	0.
2004	2.	36.	0.	5.	0.	0.	0.	0.
2005	2.	40.	0.	6.	0.	0.	0.	0.
2006	2.	44.	0.	7.	0.	0.	0.	0.
2007	2.	48.	0.	7.	0.	0.	0.	0.
2008	3.	52.	0.	8.	0.	0.	0.	0.
2009	3.	57.	0.	9.	0.	0.	0.	0.
2010	3.	62.	0.	10.	0.	0.	0.	0.
2011	4.	67.	0.	11.	0.	0.	0.	0.
2012	4.	73.	0.	12.	0.	0.	0.	0.
2013	4.	78.	0.	13.	0.	0.	0.	0.
2014	5.	86.	0.	14.	0.	0.	0.	0.
2015	5.	94.	0.	16.	0.	0.	0.	0.
2016	6.	102.	0.	17.	0.	0.	0.	0.
2017	6.	110.	0.	18.	0.	0.	0.	0.
2018	7.	119.	0.	20.	0.	0.	0.	0.
2019	7.	129.	0.	22.	0.	0.	0.	0.
2020	8.	139.	0.	24.	0.	0.	0.	0.
2021	8.	149.	0.	26.	0.	0.	0.	0.
2022	9.	159.	0.	28.	0.	0.	0.	0.
2023	10.	169.	0.	30.	0.	0.	0.	0.
2024	10.	183.	0.	32.	0.	0.	0.	0.
2025	11.	197.	0.	34.	0.	0.	0.	0.
2026	12.	212.	0.	37.	0.	0.	0.	0.
2027	13.	226.	0.	39.	0.	0.	0.	0.
2028	13.	241.	0.	43.	0.	0.	0.	0.
2029	14.	258.	0.	46.	0.	0.	0.	0.
2030	15.	276.	0.	49.	0.	0.	0.	0.
2031	16.	294.	0.	52.	0.	0.	0.	0.
2032	17.	312.	0.	55.	0.	0.	0.	0.
2033	19.	329.	0.	59.	0.	0.	0.	0.
2034	20.	352.	0.	64.	0.	0.	0.	0.
2035	21.	374.	0.	69.	0.	0.	0.	0.
2036	22.	396.	0.	74.	0.	0.	0.	0.
2037	24.	418.	0.	79.	0.	0.	0.	0.
2038	25.	442.	0.	84.	0.	0.	0.	0.
2039	26.	469.	0.	89.	0.	0.	0.	0.

2004 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	0.	3621.
2003	0.	0.	0.	3851.
2004	0.	0.	0.	4085.
2005	0.	0.	0.	4326.
2006	0.	0.	0.	4577.
2007	0.	0.	0.	4842.
2008	0.	0.	0.	5108.
2009	0.	0.	0.	5370.
2010	0.	0.	0.	5646.
2011	0.	0.	0.	5927.
2012	0.	0.	0.	6189.
2013	0.	0.	0.	6456.
2014	0.	0.	0.	6735.
2015	0.	0.	0.	7018.
2016	0.	0.	0.	7291.
2017	0.	0.	0.	7578.
2018	0.	0.	0.	7881.
2019	0.	0.	0.	8200.
2020	0.	0.	0.	8518.
2021	0.	0.	0.	8850.
2022	0.	0.	0.	9195.
2023	0.	0.	0.	9518.
2024	0.	0.	0.	9854.
2025	0.	0.	0.	10173.
2026	0.	0.	0.	10472.
2027	0.	0.	0.	10739.
2028	0.	0.	0.	10973.
2029	0.	0.	0.	11161.
2030	0.	0.	0.	11321.
2031	0.	0.	0.	11419.
2032	0.	0.	0.	11429.
2033	0.	0.	0.	11416.
2034	0.	0.	0.	11317.
2035	0.	0.	0.	11172.
2036	0.	0.	0.	10996.
2037	0.	0.	0.	10784.
2038	0.	0.	0.	10529.
2039	0.	0.	0.	10298.

FUTURE AC INTERTIE REPLACEMENTS FOR YEAR 2005:

YEAR	2001 DOLLARS	2005 DOLLARS
2002	3621.	
2003	3851.	
2004	4085.	
2005	4324.	
2006	4569.	4921.
2007	4831.	5203.
2008	5094.	5487.
2009	5354.	5767.
2010	5628.	6061.
2011	5906.	6361.
2012	6166.	6641.
2013	6430.	6925.
2014	6706.	7223.
2015	6986.	7524.
2016	7256.	7815.
2017	7540.	8121.
2018	7840.	8443.
2019	8155.	8783.
2020	8470.	9122.
2021	8799.	9476.
2022	9140.	9844.
2023	9458.	10187.
2024	9790.	10544.
2025	10105.	10883.
2026	10398.	11199.
2027	10660.	11481.
2028	10889.	11727.
2029	11072.	11924.
2030	11226.	12090.
2031	11317.	12189.
2032	11320.	12192.
2033	11300.	12171.
2034	11194.	12056.
2035	11042.	11892.
2036	10859.	11695.
2037	10641.	11460.
2038	10379.	11178.
2039	10142.	10923.
2040	9921.	10685.

2005 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R2	R3	SQ	S0	R2	R3	R3	R2
LIFE	60	60	40	39	34	34	100	50
H-W	1	1	2	2	2	2	3	4
2002	152.	75.	0.	1179.	1173.	896.	107.	4.
2003	158.	80.	0.	1194.	1259.	1004.	114.	4.
2004	164.	85.	0.	1207.	1344.	1116.	121.	4.
2005	171.	91.	0.	1218.	1432.	1231.	129.	4.
2006	177.	97.	0.	1228.	1522.	1351.	137.	5.
2007	183.	103.	0.	1237.	1620.	1480.	144.	5.
2008	190.	109.	0.	1247.	1721.	1607.	152.	5.
2009	197.	116.	0.	1256.	1823.	1727.	161.	5.
2010	204.	123.	0.	1266.	1929.	1854.	171.	6.
2011	211.	130.	0.	1274.	2039.	1984.	180.	6.
2012	218.	137.	0.	1282.	2146.	2098.	190.	6.
2013	226.	144.	0.	1290.	2255.	2215.	199.	7.
2014	233.	151.	0.	1298.	2368.	2335.	210.	7.
2015	240.	158.	0.	1304.	2481.	2461.	220.	7.
2016	248.	165.	0.	1310.	2590.	2580.	231.	8.
2017	255.	172.	0.	1315.	2703.	2710.	241.	8.
2018	263.	180.	0.	1320.	2817.	2855.	252.	9.
2019	271.	187.	0.	1323.	2927.	3017.	265.	9.
2020	278.	193.	0.	1325.	3037.	3180.	277.	10.
2021	285.	200.	0.	1327.	3148.	3356.	290.	10.
2022	293.	207.	0.	1327.	3259.	3545.	302.	11.
2023	300.	214.	0.	1326.	3364.	3720.	315.	11.
2024	307.	220.	0.	1324.	3468.	3905.	329.	12.
2025	314.	227.	0.	1321.	3568.	4077.	343.	12.
2026	321.	232.	0.	1316.	3663.	4237.	357.	13.
2027	328.	237.	0.	1309.	3749.	4375.	371.	13.
2028	334.	243.	0.	1301.	3828.	4487.	385.	14.
2029	341.	249.	0.	1292.	3894.	4563.	401.	15.
2030	347.	255.	0.	1282.	3948.	4622.	417.	15.
2031	353.	260.	0.	1269.	3990.	4634.	433.	16.
2032	359.	265.	0.	1255.	4012.	4580.	448.	17.
2033	364.	270.	0.	1242.	4029.	4507.	464.	17.
2034	369.	275.	0.	1230.	4022.	4362.	483.	18.
2035	374.	281.	0.	1219.	3999.	4185.	502.	19.
2036	379.	287.	0.	1208.	3964.	3989.	521.	19.
2037	384.	293.	0.	1198.	3915.	3771.	539.	20.
2038	388.	299.	0.	1187.	3847.	3528.	558.	21.
2039	392.	305.	0.	1179.	3766.	3317.	579.	21.
2040	396.	311.	0.	1171.	3681.	3123.	600.	22.

2005 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	R3	R4	S3	R4	SQ	SQ	L3	SQ
LIFE	50	100	30	75	20	5	10	15
H-W	4	5	1	1	1	1	1	1
2002	1.	30.	0.	4.	0.	0.	0.	0.
2003	1.	32.	0.	5.	0.	0.	0.	0.
2004	2.	36.	0.	5.	0.	0.	0.	0.
2005	2.	40.	0.	6.	0.	0.	0.	0.
2006	2.	44.	0.	7.	0.	0.	0.	0.
2007	2.	48.	0.	7.	0.	0.	0.	0.
2008	3.	52.	0.	8.	0.	0.	0.	0.
2009	3.	57.	0.	9.	0.	0.	0.	0.
2010	3.	62.	0.	10.	0.	0.	0.	0.
2011	4.	67.	0.	11.	0.	0.	0.	0.
2012	4.	73.	0.	12.	0.	0.	0.	0.
2013	4.	78.	0.	13.	0.	0.	0.	0.
2014	5.	86.	0.	14.	0.	0.	0.	0.
2015	5.	94.	0.	16.	0.	0.	0.	0.
2016	6.	102.	0.	17.	0.	0.	0.	0.
2017	6.	110.	0.	18.	0.	0.	0.	0.
2018	7.	119.	0.	20.	0.	0.	0.	0.
2019	7.	129.	0.	22.	0.	0.	0.	0.
2020	8.	139.	0.	24.	0.	0.	0.	0.
2021	8.	149.	0.	26.	0.	0.	0.	0.
2022	9.	159.	0.	28.	0.	0.	0.	0.
2023	10.	169.	0.	30.	0.	0.	0.	0.
2024	10.	183.	0.	32.	0.	0.	0.	0.
2025	11.	197.	0.	34.	0.	0.	0.	0.
2026	12.	212.	0.	37.	0.	0.	0.	0.
2027	12.	226.	0.	39.	0.	0.	0.	0.
2028	13.	241.	0.	43.	0.	0.	0.	0.
2029	14.	258.	0.	46.	0.	0.	0.	0.
2030	15.	276.	0.	49.	0.	0.	0.	0.
2031	16.	294.	0.	52.	0.	0.	0.	0.
2032	17.	312.	0.	55.	0.	0.	0.	0.
2033	19.	329.	0.	59.	0.	0.	0.	0.
2034	20.	352.	0.	64.	0.	0.	0.	0.
2035	21.	374.	0.	69.	0.	0.	0.	0.
2036	22.	396.	0.	74.	0.	0.	0.	0.
2037	24.	418.	0.	79.	0.	0.	0.	0.
2038	25.	442.	0.	84.	0.	0.	0.	0.
2039	26.	469.	0.	89.	0.	0.	0.	0.
2040	28.	496.	0.	93.	0.	0.	0.	0.

2005 AC INTERTIE REPLACEMENTS BY INDIVIDUAL PLANT ACCOUNTS:

CURVE	SQ	SQ	L2	
LIFE	30	25	15	
H-W	1	1	1	
FERC ACCT	SQ	SQ	L2	
2002	0.	0.	0.	3621.
2003	0.	0.	0.	3851.
2004	0.	0.	0.	4085.
2005	0.	0.	0.	4324.
2006	0.	0.	0.	4569.
2007	0.	0.	0.	4831.
2008	0.	0.	0.	5094.
2009	0.	0.	0.	5354.
2010	0.	0.	0.	5628.
2011	0.	0.	0.	5906.
2012	0.	0.	0.	6166.
2013	0.	0.	0.	6430.
2014	0.	0.	0.	6706.
2015	0.	0.	0.	6986.
2016	0.	0.	0.	7256.
2017	0.	0.	0.	7540.
2018	0.	0.	0.	7840.
2019	0.	0.	0.	8155.
2020	0.	0.	0.	8470.
2021	0.	0.	0.	8799.
2022	0.	0.	0.	9140.
2023	0.	0.	0.	9458.
2024	0.	0.	0.	9790.
2025	0.	0.	0.	10105.
2026	0.	0.	0.	10398.
2027	0.	0.	0.	10660.
2028	0.	0.	0.	10889.
2029	0.	0.	0.	11072.
2030	0.	0.	0.	11226.
2031	0.	0.	0.	11317.
2032	0.	0.	0.	11320.
2033	0.	0.	0.	11300.
2034	0.	0.	0.	11194.
2035	0.	0.	0.	11042.
2036	0.	0.	0.	10859.
2037	0.	0.	0.	10641.
2038	0.	0.	0.	10379.
2039	0.	0.	0.	10142.
2040	0.	0.	0.	9921.

CHAPTER 8

Financial Risk and Mitigation

8.1 BACKGROUND

BPA adopted a long-term policy in its 1993 Final Rate Proposal calling for setting rates that build and maintain financial reserves sufficient for the agency to achieve a 95 percent probability of meeting U.S. Treasury payments in full and on time for each two-year rate period. *See* 1993 Final Rate Proposal, Administrator's Record of Decision, WP-93-A-02 at page 72.

In 1996, the Comprehensive Review highlighted the need for a high Treasury payment probability (TPP) as part of a strategy to keep the benefits of the federal power system in the region. The Comprehensive Review recommendations were developed with three goals in mind. One of these goals was to "ensure repayment of the debt to the U.S. Treasury with a greater probability than currently exists . . .." At the time, BPA faced an 80 percent TPP for the upcoming 5-year rate period instead of the 88 percent TPP equivalent to the two-year TPP standard of 95 percent.

In this rate proposal, BPA has analyzed its transmission risks and has determined that the Initial Rate Proposal achieves the 95 percent probability standard for the transmission function.

To achieve this Treasury payment probability, the following risk mitigation "tools" were considered in the rate proposal:

1. Starting reserves: Starting financial reserves include cash in the BPA Fund and the deferred borrowing balance attributed to the transmission function. The risk-adjusted value for starting reserves is projected to average $162 million at the beginning of FY 2004.

2. Planned Net Revenues for Risk (PNRR). PNRR is a component of the revenue requirement that is added to annual expenses. PNRR adds to cash flows so that financial reserves mitigate short run cost and revenue risk and achieve the TPP goal. No PNRR were required in the revenue requirement to achieve the TPP standard under the initial proposal rate levels.

3. Two Year Rate Period. A two-year rate period was adopted by BPA for transmission rates to cover a transition period during which an RTO may be formed in the Northwest. However, the ability to revise rates after two years, or more frequently if need be, serves as an important risk mitigation tool for BPA's transmission function. The impact of adopting rates for a two-year rate period is to limit the effects of uncertainty that must be mitigated by existing cash reserves or PNRR to a period of time extending no farther in the future than the end of FY 2005. Financial risks beyond FY 2005 are mitigated by the ability to change rate levels.

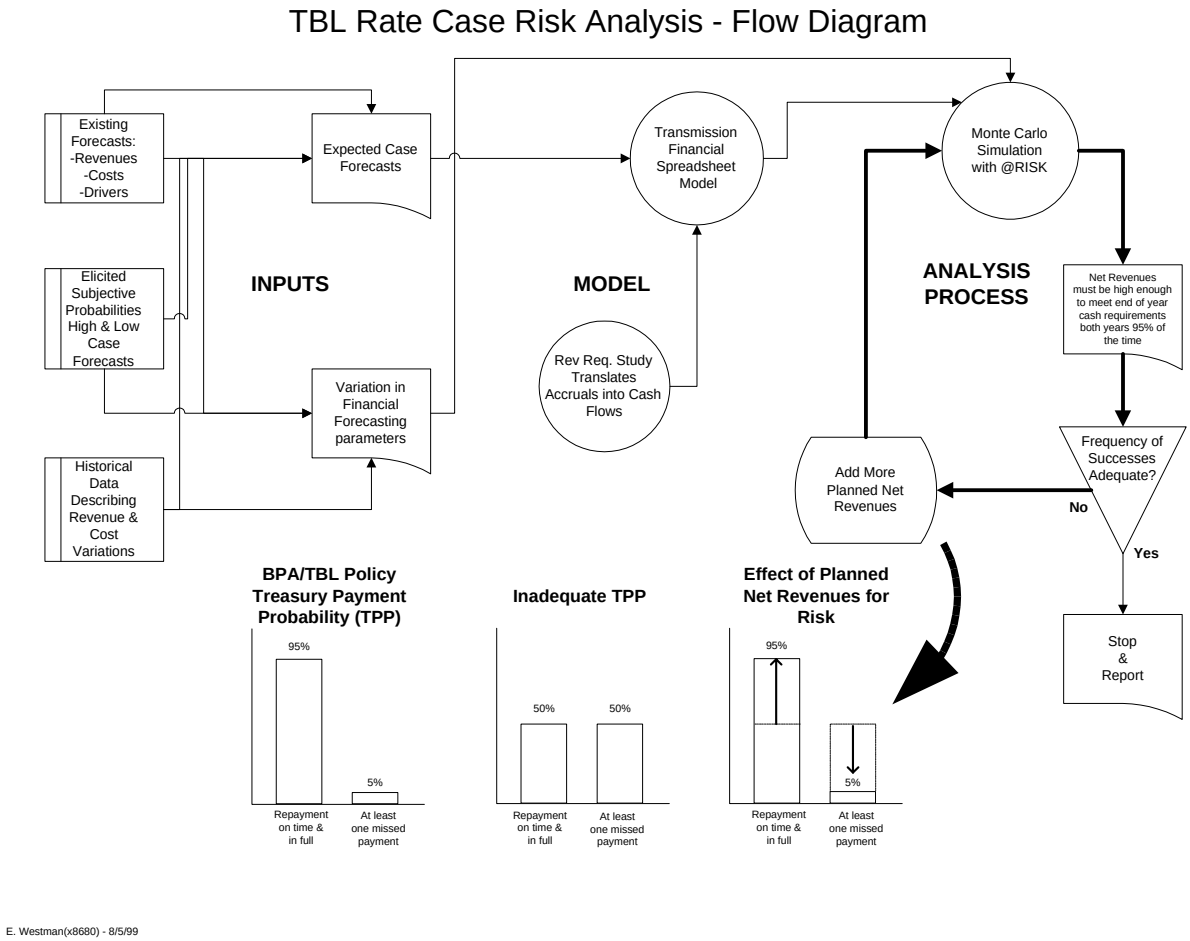
8.2 TRANSMISSION RISK ANALYSIS

To quantify the effects of risk on the finances of BPA's transmission function, BPA analyzes the effects of uncertainty in costs and revenues on transmission cash flows using a Monte Carlo simulation method. *See* Figure 8.1. The analysis is used to estimate the probability of successful Treasury payment on time and in full consistently during the rate period (FY 2004 and FY 2005). Successful Treasury payment is assumed to occur when the end of year cash reserve for the transmission function is at least sufficient to cover the

TBL's working capital requirement of $20 million per year. The working capital threshold was based on historical monthly net cash flow patterns and monthly cash requirements for the TBL.

The risk analysis is typically used in an iterative process with the Revenue Requirements Study (RRS) and the Transmission Rate Study (TRS). The risk analysis uses inputs that come from both of these studies and contributes inputs to those studies in the form of cash reserves at the beginning of the rate period and PNRR if cash reserves are insufficient to meet the TPP standard of 95%. Initial input values for point estimates of costs and revenues come from the RRS and the TRS and when combined with inputs describing uncertainty in costs and revenues, provide the basis for the initial estimate of PNRR. The PNRR is in turn provided as an expense input to the RRS, changing the transmission revenue requirement and ultimately transmission rates.

Figure 8.1



The adjusted transmission rates provide the basis for estimating expected revenues during the rate period for various transmission services. The revised estimates of expected revenues combined with the original uncertainties are used to update the risk analysis and the PNRR. This iterative analysis process is continued until estimates of PNRR converge and additional iterations no longer change the estimate of PNRR. When successive changes in PNRR diminish the risk analysis process is halted and the final estimate of PNRR is used to set the PNRR expense for the RRS and TRS.

The risk analysis covers the period of FY 2001 through FY 2005. The analysis begins with a historical period, FY2001. The change in revenues, costs, and accrual to cash adjustments that are expected to occur between the time the initial rate proposal is developed and the

end of the next rate period is analyzed. The amount of cash reserves at the start of the next rate period has a direct effect on the amount of cash reserves and PNRR needed to achieve BPA's TPP standard. The FY 2001 information reflects historical data, FY 2002 and 2003 are transition years, part history and part forecast, and FY 2004 and 2005 represent the next rate period forecast. The transition year of 2003 is analyzed with uncertainty in revenues and costs so that uncertainty in cash reserves at the beginning of the next rate period (FY 2004-2005) may be accounted for in the risk analysis.

8.3 TRANSMISSION RISK ANALYSIS MODEL

The foundation of the risk analysis is a transmission financial spreadsheet model. This model was developed in Microsoft Excel to estimate the effects of risk and risk mitigation on end of year cash reserves and likelihood of successful Treasury payment during the rate period. Cash reserve levels at the end of a FY determine whether BPA is able to meet its Treasury payment obligation. End-of-year cash reserves during the rate period are therefore the main outcome of interest. The model is organized as a "workbook" with individual work sheets including: an input matrix of revenues and costs, an income statement, a cash flow statement, and individual work sheets for the variables specified with uncertainty in the model.

The calculation of end of year cash reserves starts with historical data on start of year cash reserves, revenues earned and expenses paid during FY 2001 (Tables 8.1 and 8.2). FY 2001 transmission revenues and expenses are based on audited results of BPA's 2001 Fourth Quarter Review. The accrual based revenues and costs shown in the income statement are then converted to cash flows in the cash flow statement worksheet. The year-end cash balance in FY 2001 becomes the beginning year cash balance for FY 2002. The structure of the income statement and cash flow statement are similar to those contained in

the RRS, but does not match precisely because the tables contained in the risk analysis are for the purpose of forecasting net cash flow and the values found are expected values instead of point estimates. The net cash flow provides an estimate of the annual change in cash balance which, when added to the beginning cash balance, yields the year-end cash balance. This flow of computations is repeated sequentially for each year from FY 2001 through FY 2005.

Simulating transmission cash flows in this manner permits forecasting start of year reserves at the beginning of the rate period instead of defining FY 2004 start of year reserves as an uncertain input variable. The model forecasts the start of year FY 2004 cash reserves based on transmission function historical cash flows, current forecasts of costs and revenues, and uncertainty in costs and revenues explicitly modeled for FY 2003 (Table 8.1). Table 8.1 shows the expected value forecasts of expenses and revenues used in the RRS and the revenue forecast (TR-04-E-BPA-04). In some cases these expected values are different than the point estimate forecasts of revenues and expenses found in the RRS for the same model input variables because the uncertainty is not always symmetric about the point estimate assumed as the mean of the probability distribution for the input variable in the risk analysis.

8.4 RISK ANALYSIS COMPUTER SOFTWARE

The model used to perform the risk analysis was developed with Microsoft Excel, version 2000, and @RISK, version 4.0.5. Microsoft Excel is a basic spreadsheet computer program and @RISK is an Excel add-in computer program available from Palisade Corporation. The @RISK software allows the user to develop models incorporating uncertainty in a spreadsheet computer program environment. Uncertainty is incorporated by specifying model variables as probability distributions that reflect the variability in an

input variable of interest. With model input variables specified as probability distributions instead of as point estimates, @RISK samples values from the probability distributions and then carries out the spreadsheet computations. Randomly sampled sets of input values are drawn for each game in a Monte Carlo simulation process that involves computing results of large numbers of games in order to describe a probability distribution of outcomes, such as net revenues or cash reserves. The values sampled from the probability distributions are drawn with probability based on their relative likelihood of occurrence as specified in the input probability distributions. While @RISK provides tools that enable users to turn spreadsheet models into Monte Carlo simulation models, the user still has the burden of determining the input probability distributions for uncertain variables in the model. This is done in analyses external to the @RISK computer program.

8.5 RISK FACTORS

Transmission risk factors used in the risk analysis include:

(1) Network long-term firm NT revenues;

(2) Network long-term firm Take or Pay (PTP, IR, FPT) revenues;

(3) Network short-term firm PTP revenues;

(4) Network hourly non-firm revenues;

(5) Southern Intertie long-term firm PTP revenues;

(6) Southern Intertie short-term firm PTP revenues;

(7) Southern Intertie hourly non-firm revenues;

(8) scheduling, system control & dispatch revenues;

(9) reactive supply & voltage control revenues;

(10) regulation & frequency response revenues;

(11) Delivery segment revenues;

(12) revenue from leasing dark fiber capacity;

(13) total transmission expense annual variation, excluding between business line expenses paid to the PBL and Corporate expense;

(14) BPA Corporate expenses paid by the transmission function;

(15) effects of interest rates on interest expense for new borrowing; and

(16) proceeds from the sale of delivery facilities.

These are the model variables specified with uncertainty.

The risk variables analyzed were those judged to represent a significant impact on net revenues and cash flows, and that reasonably bear on estimating the amount of required PNRR during the next rate period. They are expected to influence beginning cash reserves at the start of the next rate period, as well. These risks are regarded as normal operating risks for the transmission function and mainly affect short-run variability in transmission cash flows between FY 2003 and FY 2005. Other long run risks such as variation in capital investment patterns; environmental effects on generation and load patterns that may change transmission costs and capacity availability; and potential changes in transmission industry structure due to formation of a Regional Transmission Organization are more speculative and not included in the analysis. Such risks are not mitigated by the combination of cash reserves at the beginning of a rate period and any PNRR that may be required to supplement those reserves. In other words they are considered exogenous risks mitigated by the TBL's ability to change rate levels in response to fundamental changes in business environment and long-term changes in cost structure.

BPA relied on two approaches to forecasting the uncertainty in risk factors modeled. When historical data were present on which to base the estimation of uncertainty in a risk input variable, BPA estimated the uncertainty in the historical data as the basis for forecasting the uncertainty in the risk variable. The underlying rationale for this approach is that the variation in the recent past is a reasonable basis for forecasting the short run future (5 years

or less). When historical data were not reasonably available, BPA relied on the judgement of technical staff familiar with specific areas of transmission risk as the basis for forecasting the uncertainty in those risk factors. In contrast to BPA's power rate case, the risk analysis for the transmission rate case does not rely on econometric models for forecasting the uncertainty due to various risk factors. Models with underlying economic behavior do not exist for the transmission function today. As a result, the transmission function relies on a statistical approach to estimating the uncertainty in risk factors when historical data are available.

Network and Intertie Transmission Revenue Uncertainties

Although the Network and Intertie rates are fixed during the rate period, the amount of revenue earned can be expected to vary due to uncertainty surrounding the quantity of service purchased by transmission customers. This is generally referred to as volumetric risk. Various underlying factors can affect the quantity of transmission service purchased. Some of these factors are related to weather such as the effect of temperature upon electric load and precipitation upon stream flows that determine the amount of generation output at hydro facilities in the Northwest. The same kinds of factors in effect outside the Northwest can influence the amount of transmission purchased to move power between regions. Other factors such as growth rates in the regional economy also influence the quantity of electricity usage and the amount of transmission needed to serve the demand for electricity. Within BPA's power functions, there is a long history of modeling and analysis aimed at understanding the effects of these factors on the demand for electricity, both at the retail and wholesale level. However, the same cannot be said for BPA's transmission function, requiring another means for forecasting the variability in the volume of transmission services sales and resultant revenues.

One source of information available for assessing transmission service volumetric risk is historical usage of the transmission system, called Total Transmission System Load or TTSL. This source of information approximates hourly loading for the transmission system defined as a whole, including the effects of interchange loads. Although these data are available over a period going back to 1985, the data are not defined and collected by segment (Network versus Intertie) or by type of service (e.g., point to point versus network integration service). The other shortcoming of historical usage data is that customers generally buy firm transmission capacity on a take or pay basis and do not always use all of the capacity that they are entitled to use. They do however pay for all of the capacity they've reserved. As a consequence, transmission usage statistics are not a good predictor of variability in transmission service revenues and can be expected to overstate the uncertainty in transmission service revenue.

Preferably, at least a decade of historical transmission billing data would be used to extrapolate future variation in transmission revenues. Unfortunately, prior to 1997, BPA billed most customers for delivered power with transmission charges embedded in the delivered bill amount. Even the bills for wheeling customers for this period offer an incomplete picture of the patterns of monthly and annual transmission revenues earned by BPA. So much has changed affecting the operation of BPA's transmission function since the 1992 Energy Policy Act and more recent FERC open access transmission orders that relatively little useful historical data are available on which to base forecasts of revenue uncertainty.

Data were available for 60 months of billed transmission revenue, by segment and type of service, for FY 1998 through 2002. If only the annual data could be used to estimate revenue variations, this analysis would be limited to only five years of annual bills. Two observations are not sufficient to estimate the standard deviation for annual revenues. An

alternative method uses data comprised of monthly observations. Although an approximation of annual variability the method focuses on the 60 monthly observations as a sample of revenues that does still reflect underlying factors, such as, weather and economic activity that drive customer transmission demand. Each of the 60 monthly observations is a consequence of those factors at play in each month of the five fiscal years for which BPA has consistently reported revenue data. The values for these months represent a sample distribution of monthly transmission revenues. For the 60 historical months for which data were available, the absolute range of monthly revenues, the minimum monthly revenue and the maximum monthly revenue are known for that period. The average monthly transmission revenue and the total annual transmission revenue can be estimated as well. The frequency with which revenues fall within particular ranges of revenue can be considered an indication of the frequency or probability that similar values will occur in future months in the short run. A histogram can be constructed based on the historical data that shows the frequency distribution for different ranges of transmission revenue by type of service. However, the number of observations remains limited and the precision with which one may describe an estimate of the underlying probability distribution is not great.

In order to maximize the value of the limited data available, BPA adopted a statistical technique referred to as the "bootstrap." Dr. Bradly Efron developed this technique at Stanford University in 1977. The bootstrap is one of a variety of statistical techniques referred to under the heading of "resampling." The techniques rely on the use of repeated samples drawn, in the case of the bootstrap, with replacement from sample populations for the purposes of building simulated data sets with much larger sample sizes used to empirically estimate measures of statistical inference, such as means, standard errors, or confidence intervals.

The purpose of the bootstrap is to enable the analyst to make statistical inferences without the necessity of the traditional probability distribution assumption of normality. The bootstrap instead treats the sample as a direct analogy to the population and then empirically estimates the statistic's sampling distribution. BPA used the bootstrap technique to empirically build a sample distribution of annual network long-term firm NT revenues by drawing a large number of replicate random samples (5000) of sample size 12 (for the number of months in a year) from the original sample distribution of 60 historical monthly revenues. From this distribution the statistic annual Network long-term firm NT revenue is estimated. The resulting frequency distribution of 5000 annual Network long-term firm NT revenue samples is an estimate of the sampling distribution of annual revenues based on FY 1998 through 2002 monthly revenues. The sampling distribution allows an estimate to be made of the uncertainty associated with the statistic annual Network long-term firm NT revenue. The bootstrap treats the sample (60 monthly revenues) as the population. *See* Efron, B. 1993, *An Introduction to the Bootstrap,* Chapman & Hall/CRC, Boca Raton; and Mooney, C. and R. Duval, 1993. *Bootstrapping: A Nonparametric Approach to Statistical Inference*, Sage Publications, Newbury Park.

The bootstrap estimated sampling distributions for Network and Southern Intertie annual revenues were used to select @RISK probability distribution functions and input parameters for these transmission revenue probability distributions. Network and Southern Intertie annual long-term firm and NT revenue uncertainties were described with a normal distribution, while annual short-term firm and hourly nonfirm revenue uncertainties were generally described using the log normal distribution. A truncated normal distribution was used for revenue categories and years where the take or pay nature of the service and the amount of contracted service in existence permitted setting a minimum for the distribution higher than minimum value for the tail of the distribution that the @RISK software would determine. The forecasted point estimates of revenues from the revenue forecast (TR-04-E-

BPA-04) were used for the mean and the standard deviation was based on the bootstrap sampling distributions. The specific input values for the Network and Intertie Revenue Risks are in Tables 8.4 and 8.5 respectively.

Although the bootstrap is a relatively recent nonparametric technique for statistical inference, it is applied today elsewhere in electric transmission industry. The bootstrap is used by the TBL System Operations and Planning Group to estimate "control limits" for quality assurance, that describe the normal range of variation expected in transmission outage frequency and duration. Control limits are much like confidence intervals from statistical inference. The TBL adopted this technique following the same practice established by the California Independent System Operator (CAISO). The use of the bootstrap to set control limits, or "Control References" was also contained in the WECC proposal for procedures for measuring and reporting transmission availability under the Reliability Management System.

Delivery Segment Revenues

Uncertainty in delivery segment revenues was estimated in the same manner as the uncertainty in transmission revenues for the Network and Intertie segments. The bootstrap technique was applied to the 60 monthly historical observations from FY 1998 though 2002 to generate a simulated sample distribution used to specify the rate period uncertainty in delivery segment revenues. The specific input values for Delivery Segment Revenue risk are presented in Table 8.7.

Fiber Revenues

The uncertainty in revenues from the sale of dark fiber optic cable transmission capacity sales were developed by members of the TBL transmission staff responsible for fiber optics program. These subject matter experts developed the distribution of future revenues

anticipated from the lease of dark fiber optic cable transmission capacity, surplus to BPA's operational needs during the next rate period. The specific input values for Fiber Revenue Risks are presented in Table 8.8.

Transmission Operations and Maintenance Expense

The uncertainty in transmission O&M expense was estimated using 21 years of historical data from FY 1978 through FY 1998. Historical expense data only were available for the total O&M expense. It was assumed that the variety of factors that have influenced year to year variations in transmission O&M expense in the historical period can reasonably be expected to prevail during the future, particularly the near term future. Like transmission revenues, the objective was to describe short run volatility and not long run variability or variation in trend that may be due to factors, such as, changes in the structure of the transmission industry in the Northwest. Such long-term effects are mitigated by the TBL's ability to change rate levels as frequently as every two years. Because the risk analysis is a short run analysis, long-term trend variation was not estimated. Instead, the short run volatility in expense was applied to the point forecasts, which include a prediction of expense trends. To estimate the short run variability in expense the trend in the data was first removed, and then the variation in the historical data was estimated. The trend in the historical data was removed by first fitting a Lowess smooth curve to the data. The Lowess smooth is a robust non-parametric smooth that is insensitive to outliers and not dependent on underlying parametric distribution assumptions. The nonlinear curve represents the long-term trend in total O&M expense. The trend was then subtracted from the historical observations and the resulting data, or residuals, were used to estimate the standard deviation for total O&M expense.

Since the risk analysis model includes subcategories of transmission O&M expense with forecasted point estimates of expenses, the volatility in total O&M expense was distributed proportionally based on the relative size of individual expense categories to the total O&M expense. Individual expense category point estimates could then be revised without compromising the integrity of the uncertainty in expenses quantified on the basis of historical variation in total O&M expense. Because the variation associated with individual

categories of expenses, effected by regression toward the mean, cannot be assumed to be the same as the uncertainty in total O&M expense it was necessary to model individual expense categories as perfectly correlated risk variables so that the uncertainty in the model's sum of transmission O&M expenses would reflect the historical variation in transmission total O&M expense used to determine the expense probability distributions. The specific input values for Transmission O&M Expense are shown in Table 8.3.

Ancillary Services Revenue

The risk associated with TBL's inter-business line expense is implicitly treated in the ancillary services revenue risk assessment. Three of the six ancillary services revenue categories were modeled with uncertainty in the risk analysis. They are 1) Scheduling, System Control, and Dispatch; 2) Reactive Supply & Voltage Control from Generation; and 3) Regulation and Frequency Response Service. The remaining three ancillary services revenues were treated as risks borne by BPA's power marketing function because the transmission function only buys what it sells or the amount of revenue expected to be earned from the sale of the service was too small to warrant modeling revenue uncertainty.

Scheduling, System Control and Dispatch is a surcharge on transmission rates and transmission customers are not permitted to self-supply this service. There is no price risk since the rate for this service is set in the rates process. The volumetric risk is assumed to vary in a manner directly proportional to the uncertainty in the total of transmission revenue. Since the majority of transmission wheeling revenue uncertainty is modeled as a normal distribution, Scheduling, System Control and Dispatch uncertainty is assumed to be normally distributed with mean equal to the point estimate forecast for revenues from the revenue forecast (TR-04-E-BPA-04) and standard deviation equal to 1.6% of mean forecasted revenue. The standard deviation is based on the simulated variation of total

Network and Southern Intertie revenues from the risk analysis model. This revenue uncertainty is modeled with the @RISK function RiskNormal. See Table 8.6.

Reactive Supply and Voltage Control service also is a mandatory service required for each transmission transaction. This service must be acquired from TBL unless the transmission customer demonstrates that it can self-supply a portion of its requirements. This factor creates a larger down side revenue risk for the service compared with Scheduling, System Control and Dispatch service. BPA's TBL has little prior experience selling Reactive Supply and Voltage Control ancillary services. Therefor, it is difficult to quantify the uncertainty in future revenues expected from services like Reactive Supply and Voltage Control where customer's ability to self-supply poses a clear risk. As a result the @RISK function RiskTriang was adopted to quantify the uncertainty in this revenue as a triangular distribution with inputs defining the minimum revenue, the most likely revenue and the maximum revenue. The triangular distribution is recommended by the developers of @RISK for applications where little data is available and where only rough estimates of uncertainty are feasible. The input assumptions were obtained from TBL staff familiar with the ancillary services tariffs and rates. The most likely revenue input is the point estimate used in the RRS and the minimum and maximum values are found in Table 8.6.

Regulation and Frequency Response service is a load-based service that only is applied to load in BPA's control area. The amount of revenue earned from this service is dependent on the amount of load that exists within TBL's control area and the rate of load growth. Similarly, the TBL adopted the triangular distribution as a means of approximating the uncertainty that is expected to be associated with revenues earned from this service. TBL staff familiar with ancillary services based their estimate of the variation in Regulation and Frequency Response revenue on their assessment of the potential for load leaving the TBL's load control area and potential for load growth. The estimated variation defined the

minimum revenue and maximum revenue for this service. The specific input values for the @RISK RiskTriang function are in Table 8.6.

Interest Rate Risk

Annual volatility in Treasury borrowing rates can affect short run interest expense for new debt required to finance transmission capital program additions. This effect was modeled by defining Treasury borrowing rates as an uncertain variable using the same distribution assumptions as in BPA's 2002 power rate case and estimating the effects of the uncertain interest rates on incremental transmission interest expense each year from FY 2003 through FY 2005. *See* Risk Analysis Study Documentation, Chapter 2, WP-02-E-BPA-03A. In each year, a randomly sampled interest rate is drawn in each game for the debt added in that year. The extent to which the interest rate is above or below the expected rate determines whether there is an increase or decrease in interest expense compared to the expected interest expense for that new investment. The change in interest expense applies only to the new debt for the year in which the debt was incurred and for subsequent years during which interest payments are made on the debt. Since new debt is assumed issued midway through the fiscal year, the interest expense deviation for the first year is only half of the total interest expense deviation expected to occur for an entire year. The entire deviation in interest expense affects subsequent years. New debt in each successive year is treated similarly. Randomly sampled interest rates are drawn independently for each year in which new debt is added and for each game of the simulation. The specific input values for Interest Rate Risk are shown in Table 8.9. Since this table shows expected value deviations in interest expense for new transmission debt, the actual deviation in net interest expense values shown are nil because the expected value or mean deviation in interest expense is nil.

Sale of Delivery Facilities Risk

Transmission customers who take service through delivery facilities have the opportunity to acquire those facilities instead of paying the Delivery charge. The proceeds from these facilities have in some instances exceeded the book value of the facilities. More sales are expected, but the sales are not expected to yield net proceeds above book value. There is uncertainty in the pricing of the facilities that BPA expects will be sold and the number of facilities sold. The proceeds from facilities sold are assumed applied to amortization payments, lagged one year, made as BPA removes these assets from its books. The proceeds from the sale of facilities were modeled as an uncertain variable in the risk analysis although it has very little effect on cash reserves. The uncertainty in proceeds from the sale of facilities was estimated based on the judgement of staff directly involved in the sale of facilities. That assessment takes into account affects of the number of facilities that may be sold and the potential for differences between sale price and book value of the facilities. The specific input values for Sale of Facilities Net Proceeds Risk are shown in Table 8.10.

8.6 RISK CORRELATIONS

The risk analysis models revenue and cost risks as diversified risks. The chances of outcomes for individual risk factors are therefore independent of each other. The result is that the chance of consistently good luck or consistently bad luck across all of the risks is very low. More frequently in any individual simulation game the chances are that some risks will harm the TBL's financial reserves while others will benefit or increase financial reserves. However, the TPP standard is focused on the downside risk or the chances of the TBL not being able to meet it Treasury payment obligations.

If there were significant correlations between risk factors the assumption of diversified risks could serve to either bias the risk analysis in the direction of excessive risk mitigation or

insufficient risk mitigation depending on the direction of the correlation. Risks can either be positively correlated or negatively correlated. Where data were available BPA analyzed risk factor correlation and found no compelling basis for explicitly modeling the effects of correlations among revenue and expense risks. See Final Revenue Requirement Documentation, TR-02-FS-BPA-01A, Chapter 9.

8.7 RISK ANALYSIS RESULTS

The transmission risk analysis simulation resulted in 2,983 games out of 3000 in which end of year financial reserves were sufficient to pay Treasury on time and in full in both years of the FY 2004 through FY 2005 rate period. This represents a 99.4% TPP for the rate period. These results were obtained with a pseudo random number seed value of "20" and the @RISK sampling option set for Latin Hypercube sampling.

Financial Reserves and PNRR

The expected year-end cash reserves for FYs 2004 and 2005 are estimated to be $144 million and $149 million, respectively (Table 8.2). The range of possible financial reserves at the end of the current rate period and each year of the next rate period is shown in Figure 8.2. Since the 5th percentile of year-end reserves stays above $20 million, assuming $162 million start of year reserves in 2004 and the proposed rate levels, no PNRR were necessary to achieve the 95% TPP.

Figure 8.2

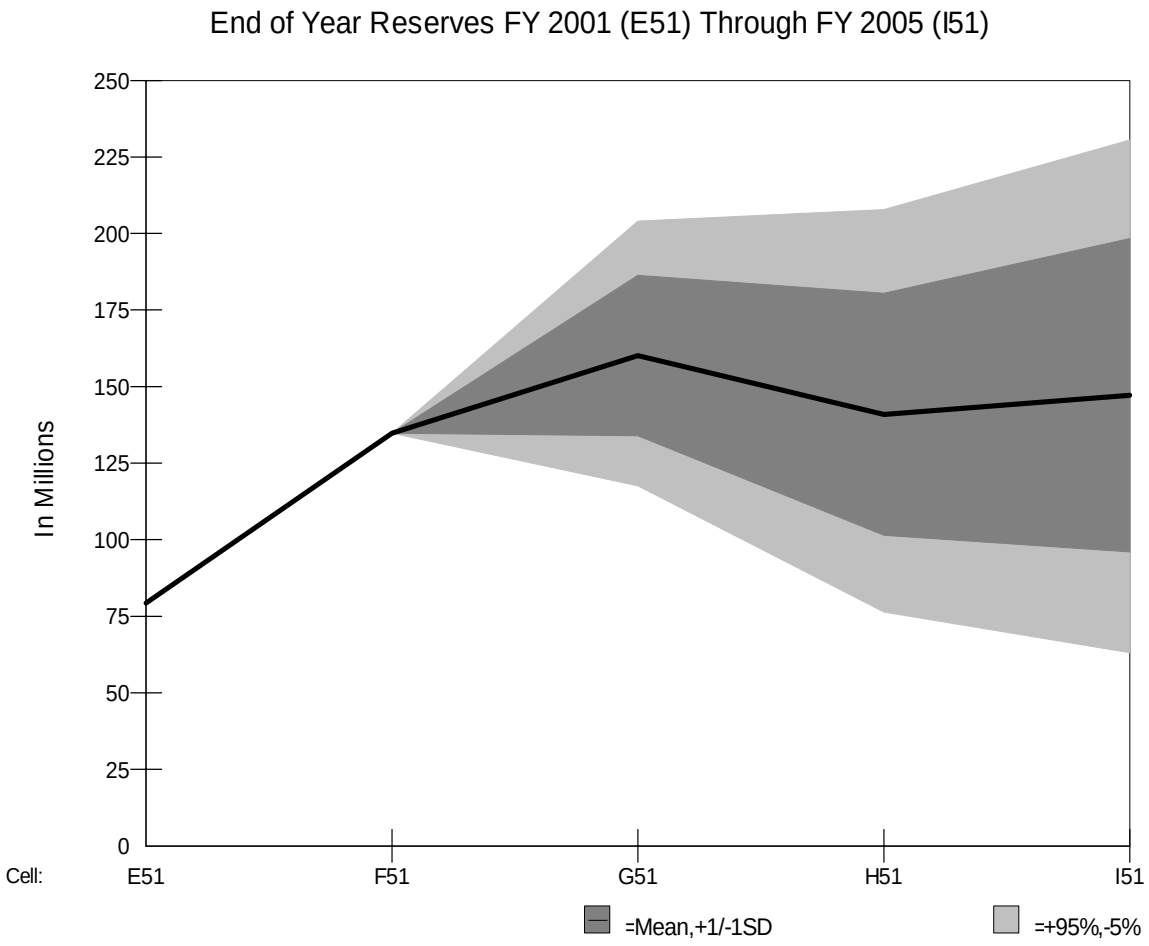

End of Year Reserves FY 2001 (E51) Through FY 2005 (I51)
In Millions
250
225
200
175
150
125
100
75
50
25
0
Cell:
E51
F51
G51
H51
I51
=Mean,+1/-1SD
=+95%,-5%

TABLE 8.1: Statement of Revenues and Expenses - Transmission Business

	($ millions)	2001	2002	2003	2004	2005
	Operating Revenues	(Actuals)				
1.	Transmission Revenues	506.8	497.1	504.4	516.5	541.0
2.	Ancillary Services Revenues	65.0	132.9	133.9	137.1	143.2
3.	Delivery Segment Revenues	11.3	12.2	8.1	6.1	6.2
4.	Fiber & PCS Revenues	18.0	15.9	16.0	16.2	6.4
5.	TBL Services Revenues	10.6	7.2	10.0	10.0	10.0
6.	Other Revenues & Credits	35.0	46.4	36.5	36.9	37.1
7.	**Total Operating Revenues**	**646.7**	**711.7**	**709.0**	**722.8**	**743.9**
	Operating Expenses					
8.	Transmission G&A	17.2	16.6	17.1	17.5	17.9
9.	CSRS Pension Expense	4.0	27.6	17.6	15.5	13.3
10.	Transmission Marketing	10.7	15.0	14.8	15.4	15.8
11.	Transmission Scheduling	5.3	8.8	8.2	8.4	8.6
12.	Transmission System Operations	30.9	34.4	36.5	37.5	38.4
13.	Transmission System Maintenance	67.1	73.6	78.0	80.0	82.0
14.	Transmission System Development	12.2	16.2	12.5	12.8	13.1
15.	Wheeling/Leases	0.0	5.8	5.9	6.0	6.2
16.	Environment	4.6	5.0	4.4	4.5	4.6
17.	Transmission Support Services	13.2	16.3	17.2	17.6	18.1
18.	TBL Services Expenses	10.6	8.7	10.0	10.0	10.0
19.	Between Business Line Expenses	63.4	80.7	77.3	80.3	80.3
20.	Corporate Expenses	43.7	52.7	59.7	61.5	64.0
21.	**Total Transmission Operating Expense**	**282.9**	**361.4**	**359.1**	**366.9**	**372.2**
22.	**Net Operating Margin**	**363.8**	**350.3**	**349.9**	**355.9**	**371.7**
23.	Federal Projects Depreciation	154.9	161.0	163.0	176.5	188.4
24.	**Total Operating Expense & Depreciation**	**437.7**	**522.5**	**522.1**	**543.4**	**560.6**
25.	**Net Operating Revenue**	**208.9**	**189.2**	**186.9**	**179.5**	**183.3**
	Interest Expense					
26.	Interest on Appropriated Funds	71.6	66.9	65.3	63.5	61.5
27.	Interest on Long-Term Debt Issued to Treasury	102.8	133.8	147.2	162.2	173.0
28.	Interest Credit on Cash Reserves	0.0	(20.6)	(21.4)	(23.1)	(23.1)
29.	Amortization of Capitalized Bond Premiums	0.0	3.9	3.9	3.9	3.5
30.	Capitalization Adjustment	0.0	(19.7)	(20.2)	(19.7)	(20.1)
31.	AFUDC	0.0	(13.5)	(16.4)	(23.6)	(22.5)
32.	Net Interest Expense	174.3	150.9	158.4	163.2	172.3
33.	**Total Operating & Net Interest Expenses**	**612.1**	**673.4**	**680.5**	**706.5**	**732.9**
34.	**Net Revenues**	**34.6**	**38.3**	**28.5**	**16.3**	**11.0**

TABLE 8.2: Statement of Cash Flows - Transmission Business

	($ millions)	2001	2002	2003	2004	2005
	Cash Provided by Current Operations	(Actuals)				
1.	Net Revenues	34.6	38.3	28.5	16.3	11.0
	Expenses not Requiring Cash					
2.	Depreciation/Amortization	154.9	161.0	163.0	176.5	188.4
3.	Amort of Capitalized Bond Premiums	3.9	3.9	3.9	3.9	3.5
4.	Capitalization Adjustment	0.0	(19.7)	(20.2)	(19.7)	(20.1)
5.	Revenue Recognition (Third AC)	(2.6)	(4.4)	(4.4)	(4.4)	(4.4)
6.	Revenue Recognition (Fiberoptics)		(0.9)	(0.9)	(0.9)	(0.9)
7.	Proceeds from Sale of Assets	10.0	6.8	5.4	3.9	4.3
8.	Payments for Stranded Investments/Defaults		2.1	12.0	(10.0)	
9.	Clark Settlement	0.7				
10.	Cash Provided by Current Operations	201.5	187.2	187.4	165.5	181.8
	Cash Used for Capital Investments					
	Investment in					
11.	Gross Utility Plant and CWIP	(182.7)	(240.3)	(338.9)	(340.0)	(289.7)
12.	Cash Used for Capital Investments	(182.7)	(240.3)	(338.9)	(340.0)	(289.7)
	Cash From Borrowing and Appropriations					
13.	Cash from Borrowing & Appropriations	182.7	240.3	338.9	320.0	269.7
14.	Debt Reassignment (from Corporate)			219.0		
15.	Repayment of Long-term Debt	(12.3)	(88.7)	(142.8)	(126.9)	(153.5)
16.	Accelerated Repayment of Debt (Debt Mgt.)			(219.0)		
17.	Accelerated Repayment of Debt (Asset Sales)			(17.5)	(7.6)	(3.9)
18.	Repayment of Capital Appropriations	(46.8)	(42.9)	0.0	(28.6)	(0.0)
19.	Subtotal Cash from Borrowing & Approp	123.6	108.7	178.6	157.0	112.3
20.	**Annual Change in Cash Balance**	142.4	55.6	27.1	(17.5)	4.4
21.	Plus Beginning Cash Balance	(12.8)	79.2	134.8	161.9	144.3
22.	Year End Cash Balance	129.6	134.8	161.9	144.3	148.8
23.	Deferred Borrowing	(50.4)	0.0	0.0	0.0	0.0
24.	Total Reserves	79.2	134.8	161.9	144.3	148.8

25.	Treasury Payment - Annual (1 = Yes, 0 = No):	**1**	**1**	**1**	**1**	
26.	Treasury Payment - Rate Period (1 = Yes, 0 = No):			**1**		

TABLE 8.3: Transmission Expense Risk

	Operating Expenses	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
	($1,000)	(Actuals)	(Transition)			(Rate Period)
1.	**Trans O&M Expense Change From Exp Value**			0.0	0.0	0.0
2.	Total Trans O&M Expense (With Uncertainty)			212,092	215,106	217,897
3.	Transmission O&M Expense Standard Deviation			11,241	11,401	11,549
4.	Sd as pct of mean			5.3%	5.3%	5.3%
	Transmission O&M Expenses (With Uncertainty)					
5.	Transmission G&A	17,203	16,618	17,054	17,481	17,918
6.	CSRS Pension Expense	3,950	27,600	17,550	15,450	13,250
7.	Transmission Marketing and Scheduling	10,721	15,003	14,754	15,373	15,758
8.	Transmission Scheduling	5,281	8,826	8,164	8,368	8,578
9.	Transmission System Operations	30,887	34,382	36,541	37,455	38,391
10.	Transmission System Maintenance	67,052	73,614	78,045	79,996	81,996
11.	Transmission System Development	12,208	16,181	12,511	12,824	13,144
12.	Wheeling/Leases	0	5,769	5,883	6,030	6,181
13.	Environment	4,647	5,005	4,385	4,495	4,607
14.	Transmission Support Services	13,241	16,280	17,204	17,634	18,075
15.	TBL Services (Reimbursable)		8,713	10,000	10,000	10,000
16.	**Trans Exp excl Corp,BBL & CSRS**	165,190	219,276	212,092	215,106	217,897
17.	**TBL Corp & Shared Serv Expense**			64,419	65,001	63,700
18.	TBL Corp & Shared Serv. Expenses (Most Likely)	43,657	52,722	59,750	61,498	63,978
19.	Min Corp & Shared Serv Exp			58,000	58,000	55,227
20.	Max Corp & Shared Serv Exp			75,506	75,506	71,896
21.	Between Business Line Expenses	63,389	80,705	77,303	80,303	80,303

TABLE 8.4: Network Transmission Revenue Risk

	Operating Revenues	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
	($1,000)	(Actuals)	(Transition)			(Rate Period)
	Long Term Firm (Take or Pay)					
1.	Network LT Firm		281,857	285,660	298,779	303,820
2.	Mean		281,857	285,660	298,779	303,820
3.	Standard Deviation		21,280	21,567	22,558	22,938
4.	Sd as pct of mean		7.6%	7.6%	7.6%	7.6%
5.	Min					
6.	Max					
	Long Term Firm (NT Load)					
7.	Network NT Service		85,440	87,307	90,985	92,925
8.	Mean		85,440	87,307	90,985	92,925
9.	Standard Deviation		1,965	2,008	2,093	2,137
10.	Sd as pct of mean		2.3%	2.3%	2.3%	2.3%
	Short Term Firm					
11.	Network ST Firm		16,657	13,009	13,638	17,064
12.	Mean		16,657	13,007	13,637	17,064
13.	Standard Deviation		3,593	2,806	2,942	3,681
14.	Sd as pct of mean		21.6%	21.6%	21.6%	21.6%
15.	Min		3,000	3,000	3,000	1,000
16.	Max		30,000	30,000	35,000	39,449
	Nonfirm					
17.	RNF Short Term (1 to 30 days)	0	0	0	0	0
18.	ET Hourly	15,454	22,589	23,630	24,309	30,943
19.	Network Hourly Nonfirm	15,454	22,589	23,630	24,309	30,943
20.	Mean		22,589	23,630	24,309	30,943
21.	Standard Deviation		10,183	10,653	10,959	13,949
22.	Sd as pct of mean		45%	45%	45%	45%
23.	**Network Grand Total**	15,454	39,246	36,637	37,946	48,007

TABLE 8.5: Intertie Transmission Revenue Risk

	Operating Revenues	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
	($1,000)	(Actuals)	(Transition)		(Rate Period)	
	Long Term Firm					
1.	IS LT Firm	67,545	79,267	79,294	80,420	80,420
2.	Mean		79,267	79,267	80,430	80,430
3.	Standard Deviation		5,929	5,929	6,016	6,016
4.	Sd as pct of mean		7.5%	7.5%	7.5%	7.5%
5.	min		61,999	62,000	40,000	30,000
6.	max		73,999	100,000	100,000	100,000
	Short Term Firm					
7.	IS ST Firm	9,999	10,030	12,494	6,627	12,793
8.	Mean		10,030	12,494	6,627	12,793
9.	Standard Deviation		4,007	4,991	2,648	5,111
10.	Sd as pct of mean		40.0%	40.0%	40.0%	40.0%
	IS Hourly Nonfirm Revenue					
11.	IS Hourly NonFirm Revenue	2,659	1,295	2,968	1,750	3,020
12.	Mean		1,295	2,968	1,750	3,020
13.	Standard Deviation		285	654	385	665
14.	Sd as pct of mean		22%	22%	22%	22%
15.	**IS Total**	80,203	90,592	94,756	88,797	96,233

TABLE 8.6: Ancillary Services Revenue Risk

	Operating Revenues	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
	($1,000)	(Actuals)	(Transition)			(Rate Period)
1.	**Scheduling, System Control, & Dispatch**		56,828	58,355	59,800	63,799
2.	Mean		56,828	58,355	59,800	63,799
3.	Standard Deviation		4,291	4,406	4,515	4,817
4.	**Generation Supplied Reactive**		22,830	22,672	23,266	24,801
5.	Mean (Most Likely)		22,830	23,454	24,068	25,657
6.	Min		18,949	19,467	19,976	21,295
7.	Max		24,428	25,096	25,753	27,453
8.	**Regulation and Frequency Response Service**		11,438	11,150	11,705	12,260
9.	Mean (Most Likely)		11,438	11,524	12,079	12,634
10.	Min		8,318	8,404	8,959	9,514
11.	Max		13,438	13,524	14,079	14,634
12.	**Operating Reserve - Spinning Reserve Service**		20,885	20,885	21,188	21,188
13.	**Operating Reserve - Supplemental Reserve Serv.**		20,885	20,885	21,188	21,188
14.	**Energy Imbalance Service**		0	0	0	0
15.	**Generation Imbalance Service**		0	0	0	0
16.	**Total Ancillary Services**	65,000	132,867	133,949	137,148	143,237

TABLE 8.7: Delivery Segment Revenue Risk

Operating Revenues	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
($1,000)	(Actuals)	(Transition)			(Rate Period)
1. Utility	11,261	4,784	2,805	2,676	2,728
2. Utility PBL Payments	2,000	2,000	2,000	0	0
3. Industrial (UFT Method)	0	5,367	3,337	3,428	3,493
4. **Delivery Segment Revenue**	13,261	12,151	8,142	6,104	6,221
5. Mean			8,142	6,104	6,221
6. Standard Deviation			1,045	783	798
7. Sd as pct of mean			12.83%	12.83%	12.83%

TABLE 8.8: Fiber & PCS Revenue Risk

	Operating Revenues		FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
	($1,000)		(Actuals)	(Transition)		(Rate Period)	
	Fiber						
1.	Fiber&PCS Revenue (With Uncertainty)			15,916	16,030	16,209	6,401
2.	**PCS**		4,000	3,176	3,277	3,444	3,620
	Risk Distribution Values						
3.	Min						
4.	Max						
5.	Discrete Value	x1			2,752	2,765	2,781
6.		x2			12,753	12,765	2,781
7.		x3			8,752	8,765	8,781
8.	Discrete Value Probability	p1			0.05	0.05	0.05
9.		p2			0.65	0.65	0.65
10.		p3			0.3	0.3	0.3

TABLE 8.9: Treasury Borrowing Rate Interest Expense Risk

	Bond type	Principal original	Principal outstanding	E(rate)	rate	Bonds due	issued	annual interest	Fiscal Year Interest Expense Impact 2003	2004	2005
1.	TINT2003	331,725	331,725	6.35%	6.35%	2033	2003	21,065	10,532	21,065	21,065
2.	ZAFW	7,175	7,175	6.50%	6.50%	2018	2003	466	233	466	466
3.	Subtotal								10,765	21,531	21,531
4.	Subtotal Based on E(rate)								10,765	21,531	21,531
5.	Deviation in Net Interest Expense (Bonds Issued in 2003)								-	-	-
6.	TINT2004	312,666	312,666	6.30%	6.30%	2034	2004	19,698		9,849	19,698
7.	ZAFW	7,369	7,369	6.50%	6.50%	2019	2004	479		239	479
8.	Subtotal									10,088	20,177
9.	Subtotal Based on E(rate)									10,088	20,177
10.	Deviation in Net Interest Expense (Bonds Issued in 2004)									-	-
11.	TINT2005	264,292	264,292	6.20%	6.20%	2035	2005	16,386			8,193
12.	ZAFW	5,414	5,414	6.50%	6.50%	2020	2005	352			176
13.	Subtotal										8,369
14.	Subtotal Based on E(Interest Rate)										8,369
15.	Deviation in Net Interest Expense (Bonds Issued in 2005)										-
16.	TINT2006	402,750	402,750	6.20%	6.20%	2036	2006	24,971			
17.	ZAFW	5,552	5,552	6.50%	6.50%	2021	2006	361			
18.	Subtotal										
19.	Subtotal Based on E(Interest Rate)										
20.	Deviation in Net Interest Expense (Bonds Issued in 2006)										
21.	**Total Annual Variation in Net Interest Expense for New Debt**								-	-	-

	Uncertainty in Treasury Borrowing Rates Δ r	p(Δ r)
22.	-2.00%	0.05
23.	-1.25%	0.1
24.	-0.75%	0.2
25.	0.00%	0.3
26.	0.75%	0.2
27.	1.25%	0.1
28.	2.00%	0.05

TABLE 8.10: Sale of Facilities Risk

	Proceeds from Sale of Delivery Facilities	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
	($1,000)	(Actuals)	(Transition)			(Rate Period)
1.	Proceeds from Sale of Facilities			5,400	3,867	4,300
	RiskTriang Distribution Parameters					
2.	Most Likely Value (Deterministic Estimate)			6,200	3400	4700
3.	Mean			6,201	3400	4700
4.	Minimum			2,500	2500	2500
5.	Maximum			7,500	5700	5700

CHAPTER 9

REPAYMENT STUDY INPUT DATA
CURRENT STUDY
FY 2005

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin 2001 HIST YR (11/25/02)

SUMMARY OF INVESTMENTS (1000S) (FY 2005)
HISTORICAL FEDERAL INVESTMENTS

Project	Original Principal	Current Principal	Interest Rate	Due Date	Replacement?	In Service Date	Month
BONNEVILLE POWER ADMINISTRATION	6,812	-	2.500%	1985	No	1940	-
BONNEVILLE POWER ADMINISTRATION	18,906	-	2.500%	1986	No	1941	-
BONNEVILLE POWER ADMINISTRATION	461	-	2.500%	1986	No	1941	-
BONNEVILLE POWER ADMINISTRATION	8,446	-	2.500%	1987	No	1942	-
BONNEVILLE POWER ADMINISTRATION	1,052	-	2.500%	1987	No	1942	-
BONNEVILLE POWER ADMINISTRATION	16,083	-	2.500%	1988	No	1943	-
BONNEVILLE POWER ADMINISTRATION	4,538	-	2.500%	1988	No	1943	-
BONNEVILLE POWER ADMINISTRATION	583	-	2.500%	1989	No	1944	-
BONNEVILLE POWER ADMINISTRATION	249	-	2.500%	1989	No	1944	-
BONNEVILLE POWER ADMINISTRATION	3,366	-	2.500%	1990	No	1945	-
BONNEVILLE POWER ADMINISTRATION	1,306	-	2.500%	1990	No	1945	-
BONNEVILLE POWER ADMINISTRATION	2,488	-	2.500%	1991	No	1946	-
BONNEVILLE POWER ADMINISTRATION	732	-	2.500%	1991	No	1946	-
BONNEVILLE POWER ADMINISTRATION	1,773	-	2.500%	1992	No	1947	-
BONNEVILLE POWER ADMINISTRATION	1,330	-	2.500%	1992	No	1947	-
BONNEVILLE POWER ADMINISTRATION	7,468	-	2.500%	1993	No	1948	-
BONNEVILLE POWER ADMINISTRATION	2,290	-	2.500%	1993	No	1948	-
BONNEVILLE POWER ADMINISTRATION	6,809	-	2.500%	1994	No	1949	-
BONNEVILLE POWER ADMINISTRATION	2,719	-	2.500%	1994	No	1949	-
BONNEVILLE POWER ADMINISTRATION	24,111	-	2.500%	1995	No	1950	-
BONNEVILLE POWER ADMINISTRATION	6,124	-	2.500%	1995	No	1950	-
BONNEVILLE POWER ADMINISTRATION	13,266	-	2.500%	1996	No	1951	-
BONNEVILLE POWER ADMINISTRATION	7,040	-	2.500%	1996	No	1951	-
BONNEVILLE POWER ADMINISTRATION	18,610	-	2.500%	1997	No	1952	-
BONNEVILLE POWER ADMINISTRATION	8,979	-	2.500%	1997	No	1952	-
BONNEVILLE POWER ADMINISTRATION	23,550	-	6.330%	1998	No	1953	-
BONNEVILLE POWER ADMINISTRATION	11,605	-	6.330%	1998	Yes	1953	-
BONNEVILLE POWER ADMINISTRATION	23,614	-	6.510%	1999	No	1954	-
BONNEVILLE POWER ADMINISTRATION	17,370	-	6.510%	1999	No	1954	-
BONNEVILLE POWER ADMINISTRATION	11,827	-	6.620%	2000	No	1955	-
BONNEVILLE POWER ADMINISTRATION	10,283	-	6.620%	2000	Yes	1955	-
BONNEVILLE POWER ADMINISTRATION	32,221	-	6.710%	2001	Yes	1956	-
BONNEVILLE POWER ADMINISTRATION	14,573	-	6.710%	2001	No	1956	-
BONNEVILLE POWER ADMINISTRATION	15,980	15,980	6.790%	2002	Yes	1957	-
BONNEVILLE POWER ADMINISTRATION	7,933	7,933	6.790%	2002	No	1957	-
BONNEVILLE POWER ADMINISTRATION	15,593	15,593	6.840%	2003	No	1958	-
BONNEVILLE POWER ADMINISTRATION	10,654	10,654	6.840%	2003	Yes	1958	-
BONNEVILLE POWER ADMINISTRATION	8,863	8,863	6.880%	2004	Yes	1959	-
BONNEVILLE POWER ADMINISTRATION	8,157	8,157	6.880%	2004	No	1959	-
BONNEVILLE POWER ADMINISTRATION	4,218	4,218	6.910%	2005	Yes	1960	-
BONNEVILLE POWER ADMINISTRATION	3,598	3,598	6.910%	2005	No	1960	-
BONNEVILLE POWER ADMINISTRATION	11,271	11,271	6.950%	2006	Yes	1961	-
BONNEVILLE POWER ADMINISTRATION	4,468	4,468	6.950%	2006	No	1961	-
BONNEVILLE POWER ADMINISTRATION	19,597	19,597	6.980%	2007	No	1962	-
BONNEVILLE POWER ADMINISTRATION	4,877	4,877	6.980%	2007	Yes	1962	-
BONNEVILLE POWER ADMINISTRATION	4,876	4,876	7.020%	2008	No	1963	-
BONNEVILLE POWER ADMINISTRATION	4,330	4,330	7.020%	2008	Yes	1963	-
BONNEVILLE POWER ADMINISTRATION	904	904	7.020%	2008	No	1963	-
BONNEVILLE POWER ADMINISTRATION	803	803	7.020%	2008	Yes	1963	-
BONNEVILLE POWER ADMINISTRATION	5,738	5,738	7.060%	2009	Yes	1964	-
BONNEVILLE POWER ADMINISTRATION	4,151	4,151	7.060%	2009	No	1964	-
BONNEVILLE POWER ADMINISTRATION	10,171	10,171	7.090%	2010	Yes	1965	-
BONNEVILLE POWER ADMINISTRATION	7,248	7,248	7.090%	2010	Yes	1965	-
BONNEVILLE POWER ADMINISTRATION	5,202	5,202	7.090%	2010	No	1965	-
BONNEVILLE POWER ADMINISTRATION	3,706	3,706	7.090%	2010	No	1965	-
BONNEVILLE POWER ADMINISTRATION	11,830	11,830	7.130%	2011	No	1966	-
BONNEVILLE POWER ADMINISTRATION	6,647	6,647	7.130%	2011	No	1966	-
BONNEVILLE POWER ADMINISTRATION	3,049	3,049	7.130%	2011	Yes	1966	-
BONNEVILLE POWER ADMINISTRATION	1,714	1,714	7.130%	2011	Yes	1966	-
BONNEVILLE POWER ADMINISTRATION	19,003	19,003	7.160%	2012	No	1967	-
BONNEVILLE POWER ADMINISTRATION	14,300	14,300	7.160%	2012	No	1967	-

BONNEVILLE POWER ADMINISTRATION	4,566	4,566	7.160%	2012	Yes	1967	-
BONNEVILLE POWER ADMINISTRATION	3,436	3,436	7.160%	2012	Yes	1967	-
BONNEVILLE POWER ADMINISTRATION	41,070	41,070	7.200%	2013	No	1968	-
BONNEVILLE POWER ADMINISTRATION	23,202	23,202	7.200%	2013	No	1968	-
BONNEVILLE POWER ADMINISTRATION	8,076	8,076	7.200%	2013	Yes	1968	-
BONNEVILLE POWER ADMINISTRATION	4,562	4,562	7.200%	2013	Yes	1968	-
BONNEVILLE POWER ADMINISTRATION	42,237	42,237	7.230%	2014	No	1969	-
BONNEVILLE POWER ADMINISTRATION	22,537	22,537	7.230%	2014	Yes	1969	-
BONNEVILLE POWER ADMINISTRATION	384	384	7.230%	2014	No	1969	-
BONNEVILLE POWER ADMINISTRATION	205	205	7.230%	2014	Yes	1969	-
BONNEVILLE POWER ADMINISTRATION	64,977	64,977	7.270%	2015	No	1970	-
BONNEVILLE POWER ADMINISTRATION	24,412	24,412	7.270%	2015	No	1970	-
BONNEVILLE POWER ADMINISTRATION	7,995	7,995	7.270%	2015	Yes	1970	-
BONNEVILLE POWER ADMINISTRATION	3,003	3,003	7.270%	2015	Yes	1970	-
BONNEVILLE POWER ADMINISTRATION	17,805	17,805	7.290%	2016	Yes	1971	-
BONNEVILLE POWER ADMINISTRATION	17,766	17,766	7.290%	2016	Yes	1971	-
BONNEVILLE POWER ADMINISTRATION	12,051	12,051	7.290%	2016	No	1971	-
BONNEVILLE POWER ADMINISTRATION	12,025	12,025	7.290%	2016	No	1971	-
BONNEVILLE POWER ADMINISTRATION	29,326	29,326	7.290%	2017	No	1972	-
BONNEVILLE POWER ADMINISTRATION	21,170	21,170	7.290%	2017	Yes	1972	-
BONNEVILLE POWER ADMINISTRATION	3,980	3,980	7.290%	2017	No	1972	-
BONNEVILLE POWER ADMINISTRATION	2,873	2,873	7.290%	2017	Yes	1972	-
BONNEVILLE POWER ADMINISTRATION	33,788	33,788	7.280%	2018	No	1973	-
BONNEVILLE POWER ADMINISTRATION	21,656	21,656	7.280%	2018	Yes	1973	-
BONNEVILLE POWER ADMINISTRATION	16,368	16,368	7.280%	2018	No	1973	-
BONNEVILLE POWER ADMINISTRATION	10,491	10,491	7.280%	2018	Yes	1973	-
BONNEVILLE POWER ADMINISTRATION	21,826	21,826	7.270%	2019	Yes	1974	-
BONNEVILLE POWER ADMINISTRATION	20,984	20,984	7.270%	2019	Yes	1974	-
BONNEVILLE POWER ADMINISTRATION	12,563	12,563	7.270%	2019	No	1974	-
BONNEVILLE POWER ADMINISTRATION	12,079	12,079	7.270%	2019	No	1974	-
BONNEVILLE POWER ADMINISTRATION	32,026	32,026	7.250%	2020	No	1975	-
BONNEVILLE POWER ADMINISTRATION	21,916	21,916	7.250%	2020	Yes	1975	-
BONNEVILLE POWER ADMINISTRATION	17,158	17,158	7.250%	2020	No	1975	-
BONNEVILLE POWER ADMINISTRATION	11,742	11,742	7.250%	2020	Yes	1975	-
BONNEVILLE POWER ADMINISTRATION	61,025	61,025	7.230%	2021	No	1976	-
BONNEVILLE POWER ADMINISTRATION	2,212	2,212	7.230%	2021	Yes	1976	-
BONNEVILLE POWER ADMINISTRATION	33,702	33,702	7.210%	2022	No	1977	-
BONNEVILLE POWER ADMINISTRATION	5,380	5,380	7.210%	2022	Yes	1977	-
BONNEVILLE POWER ADMINISTRATION	4,981	4,981	7.210%	2022	Yes	1977	-
BONNEVILLE POWER ADMINISTRATION	3,948	3,948	7.210%	2022	No	1977	-
BPA PROGRAM	24,222	-	8.950%	2013	Yes	1978	9
BPA PROGRAM	17,770	-	8.950%	2013	No	1978	9
BPA PROGRAM	4,619	-	8.950%	2013	Yes	1978	9
BPA PROGRAM	3,389	-	8.950%	2013	No	1978	9
BPA PROGRAM	21,228	-	9.900%	2014	No	1979	9
BPA PROGRAM	14,340	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	10,610	-	9.900%	2014	No	1979	9
BPA PROGRAM	2,888	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	605	-	9.900%	2014	No	1979	9
BPA PROGRAM	165	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	98	-	9.900%	2014	No	1979	9
BPA PROGRAM	66	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	26,690	-	9.450%	2014	No	1979	6
BPA PROGRAM	21,977	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	9,804	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	7,010	-	9.450%	2014	No	1979	6
BPA PROGRAM	6,026	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	1,870	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	1,371	-	9.450%	2014	No	1979	6
BPA PROGRAM	150	-	9.450%	2014	No	1979	6
BPA PROGRAM	102	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	44,811	-	13.000%	2015	No	1980	9
BPA PROGRAM	39,696	-	13.000%	2015	No	1980	9
BPA PROGRAM	10,806	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	9,292	-	13.000%	2015	No	1980	9
BPA PROGRAM	4,253	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	2,263	-	13.000%	2015	No	1980	9
BPA PROGRAM	1,707	-	13.000%	2015	No	1980	9
BPA PROGRAM	1,469	-	13.000%	2015	Yes	1980	9

BPA PROGRAM	616	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	56	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	21	-	13.000%	2015	No	1980	9
BPA PROGRAM	10	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	119,775	-	16.600%	2016	No	1981	9
BPA PROGRAM	54,821	-	16.600%	2016	Yes	1981	9
BPA PROGRAM	277	-	16.600%	2016	No	1981	9
BPA PROGRAM	127	-	16.600%	2016	Yes	1981	9
BPA PROGRAM	46,980	-	14.400%	2017	No	1982	4
BPA PROGRAM	37,455	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	34,221	-	14.400%	2017	No	1982	12
BPA PROGRAM	15,663	-	14.400%	2017	Yes	1982	12
BPA PROGRAM	9,975	-	14.400%	2017	No	1982	4
BPA PROGRAM	4,566	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	551	-	14.400%	2017	No	1982	4
BPA PROGRAM	439	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	80	-	14.400%	2017	No	1982	12
BPA PROGRAM	36	-	14.400%	2017	Yes	1982	12
BPA PROGRAM	23	-	14.400%	2017	No	1982	4
BPA PROGRAM	11	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	77,807	-	14.150%	2017	No	1982	7
BPA PROGRAM	3,677	-	14.150%	2017	No	1982	7
BPA PROGRAM	2,932	-	14.150%	2017	Yes	1982	7
BPA PROGRAM	402	-	14.150%	2017	No	1982	7
BPA PROGRAM	105	-	14.150%	2017	Yes	1982	7
BPA PROGRAM	43	-	14.150%	2017	No	1982	7
BPA PROGRAM	34	-	14.150%	2017	Yes	1982	7
BPA PROGRAM	37,235	-	12.250%	2018	No	1983	9
BPA PROGRAM	6,708	-	12.250%	2018	Yes	1983	9
BPA PROGRAM	814	-	12.250%	2018	No	1983	9
BPA PROGRAM	203	-	12.250%	2018	No	1983	9
BPA PROGRAM	35	-	12.250%	2018	Yes	1983	9
BPA PROGRAM	4	-	12.250%	2018	No	1983	9
BPA PROGRAM	1	-	12.250%	2018	Yes	1983	9
BPA PROGRAM	29,806	-	11.700%	2018	No	1983	6
BPA PROGRAM	154	-	11.700%	2018	No	1983	6
BPA PROGRAM	40	-	11.700%	2018	Yes	1983	6
BPA PROGRAM	39,741	-	10.850%	2018	No	1983	11
BPA PROGRAM	205	-	10.850%	2018	No	1983	11
BPA PROGRAM	54	-	10.850%	2018	Yes	1983	11
BPA PROGRAM	50,567	-	13.050%	2019	No	1984	9
BPA PROGRAM	9,109	-	13.050%	2019	Yes	1984	9
BPA PROGRAM	276	-	13.050%	2019	No	1984	9
BPA PROGRAM	48	-	13.050%	2019	Yes	1984	9
BPA PROGRAM	25,283	-	12.300%	2019	No	1984	11
BPA PROGRAM	4,555	-	12.300%	2019	Yes	1984	11
BPA PROGRAM	138	-	12.300%	2019	No	1984	11
BPA PROGRAM	24	-	12.300%	2019	Yes	1984	11
BPA PROGRAM	15,182	-	11.250%	2029	Yes	1985	6
BPA PROGRAM	460	-	11.250%	2029	No	1985	6
BPA PROGRAM	80	-	11.250%	2029	Yes	1985	6
BPA PROGRAM	84,278	-	11.250%	2030	No	1985	6
BPA PROGRAM	68,194	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	30,161	-	8.150%	1996	No	1986	3
BPA PROGRAM	870	-	8.150%	1996	No	1986	3
BPA PROGRAM	443	-	8.150%	1996	No	1986	3
BPA PROGRAM	169	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	157	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	5	-	8.150%	1996	No	1986	3
BPA PROGRAM	1	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	180,054	-	8.950%	2031	No	1986	6
BPA PROGRAM	57,354	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	40,000	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	11,668	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	5,161	-	8.950%	2031	No	1986	6
BPA PROGRAM	3,117	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	1,819	-	8.950%	2031	No	1986	6
BPA PROGRAM	722	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	76	-	8.950%	2031	No	1986	6

BPA PROGRAM	29	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	96,519	-	8.350%	1992	No	1987	6
BPA PROGRAM	2,498	-	8.350%	1992	No	1987	6
BPA PROGRAM	983	-	8.350%	1992	No	1987	6
BPA PROGRAM	86,958	-	9.550%	2017	No	1987	7
BPA PROGRAM	4,113	-	9.550%	2017	No	1987	7
BPA PROGRAM	3,274	-	9.550%	2017	Yes	1987	7
BPA PROGRAM	569	-	9.550%	2017	No	1987	7
BPA PROGRAM	48	-	9.550%	2017	No	1987	7
BPA PROGRAM	38	-	9.550%	2017	Yes	1987	7
BPA PROGRAM	37,342	-	9.550%	2032	No	1987	7
BPA PROGRAM	7,903	-	9.550%	2032	No	1987	7
BPA PROGRAM	3,109	-	9.550%	2032	Yes	1987	7
BPA PROGRAM	631	-	9.550%	2032	No	1987	7
BPA PROGRAM	618	-	9.550%	2032	Yes	1987	7
BPA PROGRAM	285	-	9.550%	2032	No	1987	7
BPA PROGRAM	112	-	9.550%	2032	Yes	1987	7
BPA PROGRAM	54,409	-	9.300%	2032	Yes	1987	4
BPA PROGRAM	43,236	-	9.300%	2032	No	1987	4
BPA PROGRAM	1,409	-	9.300%	2032	No	1987	4
BPA PROGRAM	554	-	9.300%	2032	No	1987	4
BPA PROGRAM	281	-	9.300%	2032	No	1987	4
BPA PROGRAM	111	-	9.300%	2032	No	1987	4
BPA PROGRAM	43,417	-	9.500%	2018	No	1988	2
BPA PROGRAM	283	-	9.500%	2018	No	1988	2
BPA PROGRAM	30,004	-	9.900%	2033	Yes	1988	6
BPA PROGRAM	9,018	-	9.900%	2033	No	1988	6
BPA PROGRAM	752	-	9.900%	2033	Yes	1988	6
BPA PROGRAM	226	-	9.900%	2033	No	1988	6
BPA PROGRAM	45,870	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	28,513	-	9.500%	2033	No	1988	2
BPA PROGRAM	27,887	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	22,923	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	20,677	-	9.500%	2033	No	1988	2
BPA PROGRAM	1,725	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	954	-	9.500%	2033	No	1988	2
BPA PROGRAM	933	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	518	-	9.500%	2033	No	1988	2
BPA PROGRAM	56,257	-	8.950%	1999	Yes	1989	5
BPA PROGRAM	16,909	-	8.950%	1999	No	1989	5
BPA PROGRAM	1,410	-	8.950%	1999	No	1989	5
BPA PROGRAM	424	-	8.950%	1999	No	1989	5
BPA PROGRAM	41,894	-	9.250%	2030	No	1990	1
BPA PROGRAM	3,824	-	9.250%	2030	Yes	1990	1
BPA PROGRAM	3,008	-	9.250%	2030	No	1990	1
BPA PROGRAM	1,149	-	9.250%	2030	No	1990	1
BPA PROGRAM	96	-	9.250%	2030	Yes	1990	1
BPA PROGRAM	29	-	9.250%	2030	No	1990	1
BPA PROGRAM	54,145	-	7.550%	1995	No	1991	2
BPA PROGRAM	5,855	-	7.550%	1995	No	1991	2
BPA PROGRAM	80,000	-	6.200%	1995	No	1992	4
BPA PROGRAM	50,000	-	7.000%	1997	No	1992	4
BPA PROGRAM	28,300	-	7.000%	1997	No	1992	4
BPA PROGRAM	107,800	-	6.600%	2000	No	1992	8
BPA PROGRAM	107,700	-	7.250%	2007	No	1992	8
BPA PROGRAM	147,521	-	8.800%	2032	No	1992	4
BPA PROGRAM	2,479	-	8.800%	2032	No	1992	4
BPA PROGRAM	150,000	-	8.130%	2032	No	1992	7
BPA PROGRAM	50,000	-	6.050%	1998	No	1993	10
BPA PROGRAM	99,962	-	8.350%	2033	No	1993	10
BPA PROGRAM	130,000	-	7.800%	2033	No	1993	2
BPA PROGRAM	100,000	-	7.500%	2033	No	1993	4
BPA PROGRAM	110,000	110,000	6.950%	2033	No	1993	8
BPA PROGRAM	49,489	-	7.100%	1998	No	1994	5
BPA PROGRAM	43,155	-	7.100%	1998	No	1994	5
BPA PROGRAM	4,456	-	7.100%	1998	No	1994	5
BPA PROGRAM	55,000	-	7.650%	1999	No	1994	9
BPA PROGRAM	50,000	-	8.200%	2034	No	1994	5
BPA PROGRAM	50,000	50,000	7.050%	2034	No	1994	1

BPA PROGRAM	108,400	108,400	6.850%	2034	No	1994	10
BPA PROGRAM	50,000	50,000	6.850%	2034	No	1994	10
BPA PROGRAM	55,000	-	8.350%	2001	No	1995	1
BPA PROGRAM	65,000	65,000	7.700%	2025	No	1995	8
BPA PROGRAM	49,933	37,663	7.700%	2025	No	1995	7
BPA PROGRAM	54,378	54,378	5.900%	2003	No	1996	1
BPA PROGRAM	70,000	70,000	7.050%	2006	No	1996	8
BPA PROGRAM	22,600	22,600	6.800%	2004	No	1997	1
BPA PROGRAM	80,000	80,000	6.900%	2005	No	1997	5
BPA PROGRAM	111,254	111,254	6.650%	2007	No	1997	8
BPA PROGRAM	75,300	75,300	6.000%	2008	No	1998	4
BPA PROGRAM	40,000	40,000	5.750%	2008	No	1998	8
BPA PROGRAM	72,700	72,700	6.000%	2009	No	1998	5
BPA PROGRAM	40,000	40,000	6.200%	2011	No	1998	5
BPA PROGRAM	106,600	106,600	5.850%	2023	No	1998	8
BPA PROGRAM	112,400	112,400	5.850%	2028	No	1998	8
BPA PROGRAM	50,000	50,000	6.650%	2029	No	1998	10
BPA PROGRAM	98,900	98,900	6.700%	2032	No	1998	5
BPA PROGRAM	40,000	40,000	6.200%	2002	No	1999	9
BPA PROGRAM	26,200	26,200	5.950%	2004	No	1999	5
BPA PROGRAM	48,920	48,920	5.900%	2014	No	1999	2
BPA PROGRAM	15,300	15,300	6.850%	2003	No	2000	8
BPA PROGRAM	40,000	40,000	6.400%	2003	No	2000	11
BPA PROGRAM	50,000	50,000	7.000%	2004	No	2000	7
BPA PROGRAM	53,500	53,500	7.150%	2005	No	2000	1
BPA PROGRAM	40,000	40,000	6.750%	2006	No	2000	9
BPA PROGRAM	20,000	20,000	5.650%	2005	No	2001	1
BPA PROGRAM	60,000	60,000	6.050%	2010	No	2001	1
BPA PROGRAM	25,000	25,000	5.950%	2011	No	2001	6
BPA PROGRAM	50,000	50,000	5.750%	2011	No	2001	8
ENVIRONMENT	12,100	-	7.200%	2010	No	1995	8
ENVIRONMENT	40,000	40,000	6.950%	2012	No	1997	11
ENVIRONMENT	30,000	30,000	6.050%	2010	No	2001	1

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin 2001 HIST YR (11/25/02)

SUMMARY OF INVESTMENTS (1000S) (FY 2005)

PROJECTED FEDERAL INVESTMENTS

Project	Original Principal	Current Principal	Interest Rate	Due Date	Replacement?	In Service Date	Month
BPA PROGRAM	272,520	272,520	6.580%	2037	No	2002	3
BPA PROGRAM	329,397	329,397	7.010%	2038	No	2003	3
BPA PROGRAM	311,633	311,633	7.180%	2039	No	2004	3
BPA PROGRAM	267,831	267,831	7.100%	2040	No	2005	3
ENVIRONMENT	-	-	6.060%	2017	No	2002	3
ENVIRONMENT	568	568	6.560%	2018	No	2003	3
ENVIRONMENT	7,369	7,369	6.770%	2019	No	2004	3
ENVIRONMENT	5,414	5,414	6.690%	2020	No	2005	3

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin 2001 HIST YR (11/25/02)

SUMMARY OF INVESTMENTS (1000S) (FY 2005)
CAPITALIZED CONTRACT OBLIGATIONS

Date	Capitalized Contract Obligations
9/30/2002	-
9/30/2006	(984.00)
9/30/2007	(1,041.00)
9/30/2008	(1,097.00)
9/30/2009	(1,153.00)
9/30/2010	(1,212.00)
9/30/2011	(1,272.00)
9/30/2012	(1,328.00)
9/30/2013	(1,385.00)
9/30/2014	(1,445.00)
9/30/2015	(1,505.00)
9/30/2016	(1,563.00)
9/30/2017	(1,624.00)
9/30/2018	(1,689.00)
9/30/2019	(1,757.00)
9/30/2020	(1,824.00)
9/30/2021	(1,895.00)
9/30/2022	(1,969.00)
9/30/2023	(2,037.00)
9/30/2024	(2,109.00)
9/30/2025	(2,177.00)
9/30/2026	(2,240.00)
9/30/2027	(2,296.00)
9/30/2028	(2,345.00)
9/30/2029	(2,385.00)
9/30/2030	(2,418.00)
9/30/2031	(2,438.00)
9/30/2032	(2,438.00)
9/30/2033	(2,434.00)
9/30/2034	(2,411.00)
9/30/2035	(2,378.00)
9/30/2036	(2,339.00)
9/30/2037	(2,292.00)
9/30/2038	(2,236.00)
9/30/2039	(2,185.00)
9/30/2040	(2,137.00)
Total	(66,038.00)

CHAPTER 10

REPAYMENT STUDY RESULTS
CURRENT STUDY
FY 2005

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin 2001 HIST YR (11/25/02)

SUMMARY OF INTEREST (1000S) (FY 2005)

Project	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
BUREAU OF RECLAMATION	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BUREAU	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
CORPS OF ENGINEERS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL CORPS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
OTHER APPROPRIATIONS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BONNEVILLE POWER ADMINISTRATION	66,903	65,279	63,484	61,499	61,499	58,531	55,448	52,417	46,152	41,019	37,560
	-	-	-	-	-	-	-	-	-	-	-
TOTAL APPROPRIATIONS	66,903	65,279	63,484	61,499	61,499	58,531	55,448	52,417	46,152	41,019	37,560
	-	-	-	-	-	-	-	-	-	-	-
BPA BORROWING	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BPA PROGRAM	127,594	140,416	155,800	167,736	170,454	170,348	170,792	172,121	176,208	181,328	183,541
ENVIRONMENT	4,595	4,614	4,882	5,312	5,493	5,493	5,493	5,493	5,493	3,678	3,678
PREMIUMS	3,993	391	1,514	-	-	-	-	-	-	-	-
(LESS INTEREST INCOME)	-8,229	-8,760	-9,376	-9,370	-9,232	-9,237	-9,233	-9,215	-9,153	-9,104	-9,072
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BPA BORROWING	127,953	136,661	152,820	163,678	166,716	166,605	167,053	168,400	172,548	175,902	178,147
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTALS	194,856	201,940	216,304	225,178	228,215	225,136	222,501	220,817	218,699	216,921	215,707

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin 2001 HIST YR (11/25/02)

SUMMARY OF AMORTIZATION (1000S) (FY 2005)

Project	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
BUREAU OF RECLAMATION	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BUREAU	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
CORPS OF ENGINEERS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL CORPS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
OTHER APPROPRIATIONS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BONNEVILLE POWER ADMINISTRATION	23,913	26,247	28,588		1	41,450	43,332	41,977	86,317	71,194	48,032	124,302
	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL APPROPRIATIONS	23,913	26,247	28,588		1	41,450	43,332	41,977	86,317	71,194	48,032	124,302
	-	-	-	-	-	-	-	-	-	-	-	-
BPA BORROWING	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
BPA PROGRAM	107,644	116,600	126,897	153,500	110,000	111,254	115,300	72,700	60,000	115,000	-
ENVIRONMENT	-	-	-	-	-	-	-	-	30,000	-	40,000
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BPA BORROWING	107,644	116,600	126,897	153,500	110,000	111,254	115,300	72,700	90,000	115,000	40,000
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTALS	131,557	142,847	155,485	153,501	151,450	154,586	157,277	159,017	161,194	163,032	164,302

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin 2001 HIST YR (11/25/02)

APPLICATION OF AMORTIZATION (1000S) (FY 2005)

Date	Project	In Service	Due	Original Balance	Amount Available	Rate	Replacement?	Amount Amortized
FY 2002	BONNEVILLE POWER ADMINISTRATION	1957	2002	7,933	7,933	6.790%	No	7,933
FY 2002	BONNEVILLE POWER ADMINISTRATION	1957	2002	15,980	15,980	6.790%	Yes	15,980
FY 2002	BPA PROGRAM	1999	2002	40,000	40,000	6.200%	No	40,000
FY 2002	BPA PROGRAM	1995	2025	49,933	37,663	7.700%	No	2,644
FY 2002	BPA PROGRAM	1995	2025	65,000	65,000	7.700%	No	65,000
SUB-TOTAL		-	-	178,846	166,576	-	Yes	131,557
FY 2003	BPA PROGRAM	2000	2003	15,300	15,300	6.850%	No	15,300
FY 2003	BONNEVILLE POWER ADMINISTRATION	1958	2003	15,593	15,593	6.840%	No	15,593
FY 2003	BONNEVILLE POWER ADMINISTRATION	1958	2003	10,654	10,654	6.840%	Yes	10,654
FY 2003	BPA PROGRAM	2000	2003	40,000	40,000	6.400%	No	40,000
FY 2003	BPA PROGRAM	1996	2003	54,378	54,378	5.900%	No	54,378
FY 2003	BPA PROGRAM	1995	2025	49,933	35,019	7.700%	No	6,922
SUB-TOTAL		-	-	185,858	170,944	-	Yes	142,847
FY 2004	BPA PROGRAM	2000	2004	50,000	50,000	7.000%	No	50,000
FY 2004	BONNEVILLE POWER ADMINISTRATION	1959	2004	8,157	8,157	6.880%	No	8,157
FY 2004	BONNEVILLE POWER ADMINISTRATION	1959	2004	8,863	8,863	6.880%	Yes	8,863
FY 2004	BPA PROGRAM	1997	2004	22,600	22,600	6.800%	No	22,600
FY 2004	BPA PROGRAM	1999	2004	26,200	26,200	5.950%	No	26,200
FY 2004	BONNEVILLE POWER ADMINISTRATION	1960	2005	3,598	3,598	6.910%	No	3,597
FY 2004	BONNEVILLE POWER ADMINISTRATION	1960	2005	4,218	4,218	6.910%	Yes	4,218
FY 2004	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,805	17,805	7.290%	Yes	3,753
FY 2004	BPA PROGRAM	1995	2025	49,933	28,097	7.700%	No	28,097
SUB-TOTAL		-	-	191,374	169,538	-	Yes	155,485
FY 2005	BPA PROGRAM	2000	2005	53,500	53,500	7.150%	No	53,500
FY 2005	BONNEVILLE POWER ADMINISTRATION	1960	2005	3,598	1	6.910%	No	1
FY 2005	BPA PROGRAM	1997	2005	80,000	80,000	6.900%	No	80,000
FY 2005	BPA PROGRAM	2001	2005	20,000	20,000	5.650%	No	20,000
SUB-TOTAL		-	-	157,098	153,501	-	No	153,501
FY 2006	BPA PROGRAM	1996	2006	70,000	70,000	7.050%	No	70,000
FY 2006	BONNEVILLE POWER ADMINISTRATION	1961	2006	4,468	4,468	6.950%	No	4,468
FY 2006	BONNEVILLE POWER ADMINISTRATION	1961	2006	11,271	11,271	6.950%	Yes	11,271
FY 2006	BPA PROGRAM	2000	2006	40,000	40,000	6.750%	No	40,000
FY 2006	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,051	12,051	7.290%	No	11,659
FY 2006	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,805	14,052	7.290%	Yes	14,052
SUB-TOTAL		-	-	155,595	151,842	-	Yes	151,450
FY 2007	BONNEVILLE POWER ADMINISTRATION	1962	2007	19,597	19,597	6.980%	No	19,597
FY 2007	BONNEVILLE POWER ADMINISTRATION	1962	2007	4,877	4,877	6.980%	Yes	4,877
FY 2007	BPA PROGRAM	1997	2007	111,254	111,254	6.650%	No	111,254
FY 2007	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,025	12,025	7.290%	No	699
FY 2007	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,766	17,766	7.290%	Yes	17,766
FY 2007	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,051	392	7.290%	No	392
SUB-TOTAL		-	-	177,570	165,911	-	Yes	154,586
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	4,876	4,876	7.020%	No	4,876
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	4,330	4,330	7.020%	Yes	4,330
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	904	904	7.020%	No	904
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	803	803	7.020%	Yes	803
FY 2008	BPA PROGRAM	1998	2008	75,300	75,300	6.000%	No	75,300
FY 2008	BPA PROGRAM	1998	2008	40,000	40,000	5.750%	No	40,000
FY 2008	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,025	11,326	7.290%	No	11,326
FY 2008	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	21,170	7.290%	Yes	12,886
FY 2008	BONNEVILLE POWER ADMINISTRATION	1972	2017	3,980	3,980	7.290%	No	3,980
FY 2008	BONNEVILLE POWER ADMINISTRATION	1972	2017	2,873	2,873	7.290%	Yes	2,873
SUB-TOTAL		-	-	166,261	165,562	-	Yes	157,277

FY 2009	BONNEVILLE POWER ADMINISTRATION	1964	2009	4,151	4,151	7.060%	No	4,151
FY 2009	BONNEVILLE POWER ADMINISTRATION	1964	2009	5,738	5,738	7.060%	Yes	5,738
FY 2009	BPA PROGRAM	1998	2009	72,700	72,700	6.000%	No	72,700
FY 2009	BONNEVILLE POWER ADMINISTRATION	1972	2017	29,326	29,326	7.290%	No	29,326
FY 2009	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	8,284	7.290%	Yes	8,284
FY 2009	BONNEVILLE POWER ADMINISTRATION	1973	2018	21,656	21,656	7.280%	Yes	11,959
FY 2009	BONNEVILLE POWER ADMINISTRATION	1973	2018	16,368	16,368	7.280%	No	16,368
FY 2009	BONNEVILLE POWER ADMINISTRATION	1973	2018	10,491	10,491	7.280%	Yes	10,491
SUB-TOTAL		-	-	181,600	168,714	-	Yes	159,017
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	3,706	3,706	7.090%	No	3,706
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	7,248	7,248	7.090%	Yes	7,248
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	5,202	5,202	7.090%	No	5,202
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	10,171	10,171	7.090%	Yes	10,171
FY 2010	BPA PROGRAM	2001	2010	60,000	60,000	6.050%	No	60,000
FY 2010	ENVIRONMENT	2001	2010	30,000	30,000	6.050%	No	30,000
FY 2010	BONNEVILLE POWER ADMINISTRATION	1970	2015	3,003	3,003	7.270%	Yes	1,381
FY 2010	BONNEVILLE POWER ADMINISTRATION	1973	2018	33,788	33,788	7.280%	No	33,788
FY 2010	BONNEVILLE POWER ADMINISTRATION	1973	2018	21,656	9,697	7.280%	Yes	9,697
SUB-TOTAL		-	-	174,774	162,815	-	Yes	161,194
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	11,830	11,830	7.130%	No	11,830
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	3,049	3,049	7.130%	Yes	3,049
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	6,647	6,647	7.130%	No	6,647
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	1,714	1,714	7.130%	Yes	1,714
FY 2011	BPA PROGRAM	1998	2011	40,000	40,000	6.200%	No	40,000
FY 2011	BPA PROGRAM	2001	2011	25,000	25,000	5.950%	No	25,000
FY 2011	BPA PROGRAM	2001	2011	50,000	50,000	5.750%	No	50,000
FY 2011	BONNEVILLE POWER ADMINISTRATION	1970	2015	24,412	24,412	7.270%	No	23,170
FY 2011	BONNEVILLE POWER ADMINISTRATION	1970	2015	3,003	1,622	7.270%	Yes	1,622
SUB-TOTAL		-	-	165,655	164,274	-	Yes	163,032
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	19,003	19,003	7.160%	No	19,003
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	4,566	4,566	7.160%	Yes	4,566
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	14,300	14,300	7.160%	No	14,300
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	3,436	3,436	7.160%	Yes	3,436
FY 2012	ENVIRONMENT	1997	2012	40,000	40,000	6.950%	No	40,000
FY 2012	BONNEVILLE POWER ADMINISTRATION	1970	2015	64,977	64,977	7.270%	No	64,977
FY 2012	BONNEVILLE POWER ADMINISTRATION	1970	2015	7,995	7,995	7.270%	Yes	7,995
FY 2012	BONNEVILLE POWER ADMINISTRATION	1970	2015	24,412	1,242	7.270%	No	1,242
FY 2012	BONNEVILLE POWER ADMINISTRATION	1974	2019	21,826	21,826	7.270%	Yes	8,783
SUB-TOTAL		-	-	200,515	177,345	-	Yes	164,302
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	41,070	41,070	7.200%	No	41,070
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	8,076	8,076	7.200%	Yes	8,076
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	23,202	23,202	7.200%	No	23,202
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	4,562	4,562	7.200%	Yes	4,562
FY 2013	BONNEVILLE POWER ADMINISTRATION	1974	2019	12,079	12,079	7.270%	No	12,079
FY 2013	BONNEVILLE POWER ADMINISTRATION	1974	2019	20,984	20,984	7.270%	Yes	20,984
FY 2013	BONNEVILLE POWER ADMINISTRATION	1974	2019	12,563	12,563	7.270%	No	12,563
FY 2013	BONNEVILLE POWER ADMINISTRATION	1974	2019	21,826	13,043	7.270%	Yes	13,043
FY 2013	BONNEVILLE POWER ADMINISTRATION	1975	2020	21,916	21,916	7.250%	Yes	2,186
FY 2013	BONNEVILLE POWER ADMINISTRATION	1975	2020	17,158	17,158	7.250%	No	17,158
FY 2013	BONNEVILLE POWER ADMINISTRATION	1975	2020	11,742	11,742	7.250%	Yes	11,742
SUB-TOTAL		-	-	195,178	186,395	-	Yes	166,664
FY 2014	BONNEVILLE POWER ADMINISTRATION	1969	2014	42,237	42,237	7.230%	No	42,237
FY 2014	BONNEVILLE POWER ADMINISTRATION	1969	2014	22,537	22,537	7.230%	Yes	22,537
FY 2014	BONNEVILLE POWER ADMINISTRATION	1969	2014	384	384	7.230%	No	384
FY 2014	BONNEVILLE POWER ADMINISTRATION	1969	2014	205	205	7.230%	Yes	205
FY 2014	BPA PROGRAM	1999	2014	48,920	48,920	5.900%	No	48,920
FY 2014	BONNEVILLE POWER ADMINISTRATION	1975	2020	32,026	32,026	7.250%	No	32,026
FY 2014	BONNEVILLE POWER ADMINISTRATION	1975	2020	21,916	19,730	7.250%	Yes	19,730
FY 2014	BONNEVILLE POWER ADMINISTRATION	1976	2021	61,025	61,025	7.230%	No	700
FY 2014	BONNEVILLE POWER ADMINISTRATION	1976	2021	2,212	2,212	7.230%	Yes	2,212
SUB-TOTAL		-	-	231,462	229,276	-	Yes	168,951
FY 2015	BONNEVILLE POWER ADMINISTRATION	1970	2015	24,412	0	7.270%	No	0
FY 2015	BONNEVILLE POWER ADMINISTRATION	1970	2015	3,003	-0	7.270%	Yes	-0

FY 2015	BONNEVILLE POWER ADMINISTRATION	1976	2021	61,025	60,325	7.230%	No	60,325
FY 2015	BONNEVILLE POWER ADMINISTRATION	1977	2022	3,948	3,948	7.210%	No	3,948
FY 2015	BONNEVILLE POWER ADMINISTRATION	1977	2022	5,380	5,380	7.210%	Yes	5,380
FY 2015	BONNEVILLE POWER ADMINISTRATION	1977	2022	33,702	33,702	7.210%	No	33,702
FY 2015	BONNEVILLE POWER ADMINISTRATION	1977	2022	4,981	4,981	7.210%	Yes	4,981
FY 2015	BPA PROGRAM	2004	2039	311,633	311,633	7.180%	No	59,232
SUB-TOTAL		-	-	448,084	419,969	-	Yes	167,568
FY 2016	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,051	-0	7.290%	No	-0
FY 2016	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,805	-0	7.290%	Yes	-0
FY 2016	BPA PROGRAM	2004	2039	311,633	252,401	7.180%	No	164,474
SUB-TOTAL		-	-	341,489	252,401	-	Yes	164,474
FY 2017	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	-0	7.290%	Yes	-0
FY 2017	BPA PROGRAM	2004	2039	311,633	87,927	7.180%	No	87,927
FY 2017	BPA PROGRAM	2005	2040	267,831	267,831	7.100%	No	78,014
SUB-TOTAL		-	-	600,634	355,758	-	Yes	165,941
FY 2018	ENVIRONMENT	2003	2018	568	568	6.560%	No	568
FY 2018	BPA PROGRAM	2005	2040	267,831	189,817	7.100%	No	166,631
SUB-TOTAL		-	-	268,399	190,385	-	No	167,199
FY 2019	ENVIRONMENT	2004	2019	7,369	7,369	6.770%	No	7,369
FY 2019	BPA PROGRAM	2005	2040	267,831	23,186	7.100%	No	23,186
FY 2019	BPA PROGRAM	2006	2041	103,807	103,807	7.100%	Yes	103,807
FY 2019	BPA PROGRAM	2007	2042	108,279	108,279	7.100%	Yes	33,913
SUB-TOTAL		-	-	487,286	242,641	-	Yes	168,275
FY 2020	BONNEVILLE POWER ADMINISTRATION	1975	2020	21,916	-0	7.250%	Yes	-0
FY 2020	ENVIRONMENT	2005	2020	5,414	5,414	6.690%	No	5,414
FY 2020	BPA PROGRAM	2007	2042	108,279	74,366	7.100%	Yes	74,366
FY 2020	BPA PROGRAM	2008	2043	112,618	112,618	7.100%	Yes	88,873
SUB-TOTAL		-	-	248,227	192,398	-	Yes	168,653
FY 2021	BPA PROGRAM	2008	2043	112,618	23,745	7.100%	Yes	23,745
FY 2021	BPA PROGRAM	2009	2044	116,874	116,874	7.100%	Yes	116,874
FY 2021	BPA PROGRAM	2010	2045	121,121	121,121	7.100%	Yes	28,047
SUB-TOTAL		-	-	350,613	261,740	-	Yes	168,665
FY 2022	BPA PROGRAM	2010	2045	121,121	93,074	7.100%	Yes	93,074
FY 2022	BPA PROGRAM	2011	2046	125,375	125,375	7.100%	Yes	75,658
SUB-TOTAL		-	-	246,496	218,449	-	Yes	168,733
FY 2023	BPA PROGRAM	1998	2023	106,600	106,600	5.850%	No	106,600
FY 2023	BPA PROGRAM	2011	2046	125,375	49,717	7.100%	Yes	49,717
FY 2023	BPA PROGRAM	2012	2047	129,703	129,703	7.100%	Yes	17,268
SUB-TOTAL		-	-	361,678	286,020	-	Yes	173,585
FY 2024	BPA PROGRAM	2012	2047	129,703	112,435	7.100%	Yes	112,435
FY 2024	BPA PROGRAM	2013	2048	134,116	134,116	7.100%	Yes	55,147
SUB-TOTAL		-	-	263,819	246,551	-	Yes	167,582
FY 2025	BPA PROGRAM	2013	2048	134,116	78,969	7.100%	Yes	78,969
FY 2025	BPA PROGRAM	2014	2049	138,570	138,570	7.100%	Yes	88,052
SUB-TOTAL		-	-	272,686	217,539	-	Yes	167,021
FY 2026	BPA PROGRAM	2014	2049	138,570	50,518	7.100%	Yes	50,518
FY 2026	BPA PROGRAM	2015	2050	142,895	142,895	7.100%	Yes	115,732
SUB-TOTAL		-	-	281,465	193,413	-	Yes	166,250
FY 2027	BPA PROGRAM	2015	2050	142,895	27,163	7.100%	Yes	27,163
FY 2027	BPA PROGRAM	2016	2051	147,016	147,016	7.100%	Yes	138,106
SUB-TOTAL		-	-	289,911	174,179	-	Yes	165,269
FY 2028	BPA PROGRAM	1998	2028	112,400	112,400	5.850%	No	112,400
FY 2028	BPA PROGRAM	2016	2051	147,016	8,910	7.100%	Yes	8,910
FY 2028	BPA PROGRAM	2017	2052	150,959	150,959	7.100%	Yes	47,986
SUB-TOTAL		-	-	410,375	272,269	-	Yes	169,296

FY 2029 BPA PROGRAM	1998	2029	50,000	50,000	6.650%	No	50,000
FY 2029 BPA PROGRAM	2017	2052	150,959	102,973	7.100%	Yes	102,973
FY 2029 BPA PROGRAM	2018	2053	154,661	154,661	7.100%	Yes	11,234
SUB-TOTAL	-	-	355,620	307,634	-	Yes	164,207
FY 2030 BPA PROGRAM	2018	2053	154,661	143,427	7.100%	Yes	143,427
FY 2030 BPA PROGRAM	2019	2054	158,269	158,269	7.100%	Yes	16,844
SUB-TOTAL	-	-	312,930	301,696	-	Yes	160,271
FY 2031 BPA PROGRAM	2019	2054	158,269	141,425	7.100%	Yes	141,425
FY 2031 BPA PROGRAM	2020	2055	161,785	161,785	7.100%	Yes	17,001
SUB-TOTAL	-	-	320,054	303,210	-	Yes	158,426
FY 2032 BPA PROGRAM	1998	2032	98,900	98,900	6.700%	No	98,900
FY 2032 BPA PROGRAM	2020	2055	161,785	144,784	7.100%	Yes	61,910
SUB-TOTAL	-	-	260,685	243,684	-	Yes	160,810
FY 2033 BPA PROGRAM	1993	2033	110,000	110,000	6.950%	No	110,000
FY 2033 BPA PROGRAM	1994	2034	50,000	50,000	7.050%	No	49,393
FY 2033 BPA PROGRAM	2020	2055	161,785	82,875	7.100%	Yes	1,705
SUB-TOTAL	-	-	321,785	242,875	-	Yes	161,098
FY 2034 BPA PROGRAM	1994	2034	50,000	608	7.050%	No	608
FY 2034 BPA PROGRAM	1994	2034	50,000	50,000	6.850%	No	50,000
FY 2034 BPA PROGRAM	1994	2034	108,400	108,400	6.850%	No	108,400
SUB-TOTAL	-	-	208,400	159,008	-	No	159,008
FY 2035 BPA PROGRAM	2003	2038	329,397	329,397	7.010%	No	151,243
FY 2035 BPA PROGRAM	2020	2055	161,785	81,169	7.100%	Yes	4,066
SUB-TOTAL	-	-	491,182	410,566	-	Yes	155,309
FY 2036 BPA PROGRAM	2002	2037	272,520	272,520	6.580%	No	122,073
FY 2036 BPA PROGRAM	2003	2038	329,397	178,154	7.010%	No	31,323
SUB-TOTAL	-	-	601,917	450,674	-	No	153,396
FY 2037 BPA PROGRAM	2002	2037	272,520	150,447	6.580%	No	150,447
FY 2037 BPA PROGRAM	2003	2038	329,397	146,831	7.010%	No	2
SUB-TOTAL	-	-	601,917	297,279	-	No	150,449
FY 2038 BPA PROGRAM	2003	2038	329,397	146,829	7.010%	No	146,829
SUB-TOTAL	-	-	329,397	146,829	-	No	146,829
FY 2039 BPA PROGRAM	2004	2039	311,633	-0	7.180%	No	-0
FY 2039 BPA PROGRAM	2020	2055	161,785	77,103	7.100%	Yes	77,103
FY 2039 BPA PROGRAM	2021	2056	165,153	165,153	7.100%	Yes	61,904
SUB-TOTAL	-	-	638,571	242,256	-	Yes	139,007
FY 2040 BPA PROGRAM	2005	2040	267,831	0	7.100%	No	0
FY 2040 BPA PROGRAM	2021	2056	165,153	103,249	7.100%	Yes	103,249
FY 2040 BPA PROGRAM	2022	2057	168,352	168,352	7.100%	Yes	32,333
SUB-TOTAL	-	-	601,336	271,601	-	Yes	135,582
FY 2041 BPA PROGRAM	2022	2057	168,352	136,019	7.100%	Yes	136,019
FY 2041 BPA PROGRAM	2023	2058	171,466	171,466	7.100%	Yes	341
SUB-TOTAL	-	-	339,818	307,485	-	Yes	136,360
GRAND TOTAL	-	-	12,616,560	9,441,201	-	Yes	6,359,125

CHAPTER 11

REPAYMENT STUDY INPUT DATA
REVISED STUDY
FY 2005

BONNEVILLE POWER ADMINISTRATION
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin, $3.5m Amor Shift, 2001 HIST YR (11/25/02)
SUMMARY OF INVESTMENTS (1000S) (FY 2005)
HISTORICAL FEDERAL INVESTMENTS

Project	Original Principal	Current Principal	Interest Rate	Due Date	Replacement?	In Service Date	Month
BONNEVILLE POWER ADMINISTRATION	6,812	-	2.500%	1985	No	1940	-
BONNEVILLE POWER ADMINISTRATION	18,906	-	2.500%	1986	No	1941	-
BONNEVILLE POWER ADMINISTRATION	461	-	2.500%	1986	No	1941	-
BONNEVILLE POWER ADMINISTRATION	8,446	-	2.500%	1987	No	1942	-
BONNEVILLE POWER ADMINISTRATION	1,052	-	2.500%	1987	No	1942	-
BONNEVILLE POWER ADMINISTRATION	16,083	-	2.500%	1988	No	1943	-
BONNEVILLE POWER ADMINISTRATION	4,538	-	2.500%	1988	No	1943	-
BONNEVILLE POWER ADMINISTRATION	583	-	2.500%	1989	No	1944	-
BONNEVILLE POWER ADMINISTRATION	249	-	2.500%	1989	No	1944	-
BONNEVILLE POWER ADMINISTRATION	3,366	-	2.500%	1990	No	1945	-
BONNEVILLE POWER ADMINISTRATION	1,306	-	2.500%	1990	No	1945	-
BONNEVILLE POWER ADMINISTRATION	2,488	-	2.500%	1991	No	1946	-
BONNEVILLE POWER ADMINISTRATION	732	-	2.500%	1991	No	1946	-
BONNEVILLE POWER ADMINISTRATION	1,773	-	2.500%	1992	No	1947	-
BONNEVILLE POWER ADMINISTRATION	1,330	-	2.500%	1992	No	1947	-
BONNEVILLE POWER ADMINISTRATION	7,468	-	2.500%	1993	No	1948	-
BONNEVILLE POWER ADMINISTRATION	2,290	-	2.500%	1993	No	1948	-
BONNEVILLE POWER ADMINISTRATION	6,809	-	2.500%	1994	No	1949	-
BONNEVILLE POWER ADMINISTRATION	2,719	-	2.500%	1994	No	1949	-
BONNEVILLE POWER ADMINISTRATION	24,111	-	2.500%	1995	No	1950	-
BONNEVILLE POWER ADMINISTRATION	6,124	-	2.500%	1995	No	1950	-
BONNEVILLE POWER ADMINISTRATION	13,266	-	2.500%	1996	No	1951	-
BONNEVILLE POWER ADMINISTRATION	7,040	-	2.500%	1996	No	1951	-
BONNEVILLE POWER ADMINISTRATION	18,610	-	2.500%	1997	No	1952	-
BONNEVILLE POWER ADMINISTRATION	8,979	-	2.500%	1997	No	1952	-
BONNEVILLE POWER ADMINISTRATION	23,550	-	6.330%	1998	No	1953	-
BONNEVILLE POWER ADMINISTRATION	11,605	-	6.330%	1998	Yes	1953	-
BONNEVILLE POWER ADMINISTRATION	23,614	-	6.510%	1999	No	1954	-
BONNEVILLE POWER ADMINISTRATION	17,370	-	6.510%	1999	No	1954	-
BONNEVILLE POWER ADMINISTRATION	11,827	-	6.620%	2000	No	1955	-
BONNEVILLE POWER ADMINISTRATION	10,283	-	6.620%	2000	Yes	1955	-
BONNEVILLE POWER ADMINISTRATION	32,221	-	6.710%	2001	Yes	1956	-
BONNEVILLE POWER ADMINISTRATION	14,573	-	6.710%	2001	No	1956	-
BONNEVILLE POWER ADMINISTRATION	15,980	15,980	6.790%	2002	Yes	1957	-
BONNEVILLE POWER ADMINISTRATION	7,933	7,933	6.790%	2002	No	1957	-
BONNEVILLE POWER ADMINISTRATION	15,593	15,593	6.840%	2003	No	1958	-
BONNEVILLE POWER ADMINISTRATION	10,654	10,654	6.840%	2003	Yes	1958	-
BONNEVILLE POWER ADMINISTRATION	8,863	8,863	6.880%	2004	Yes	1959	-
BONNEVILLE POWER ADMINISTRATION	8,157	8,157	6.880%	2004	No	1959	-
BONNEVILLE POWER ADMINISTRATION	4,218	4,218	6.910%	2005	Yes	1960	-
BONNEVILLE POWER ADMINISTRATION	3,598	3,598	6.910%	2005	No	1960	-
BONNEVILLE POWER ADMINISTRATION	11,271	11,271	6.950%	2006	Yes	1961	-
BONNEVILLE POWER ADMINISTRATION	4,468	4,468	6.950%	2006	No	1961	-
BONNEVILLE POWER ADMINISTRATION	19,597	19,597	6.980%	2007	No	1962	-
BONNEVILLE POWER ADMINISTRATION	4,877	4,877	6.980%	2007	Yes	1962	-
BONNEVILLE POWER ADMINISTRATION	4,876	4,876	7.020%	2008	No	1963	-
BONNEVILLE POWER ADMINISTRATION	4,330	4,330	7.020%	2008	Yes	1963	-
BONNEVILLE POWER ADMINISTRATION	904	904	7.020%	2008	No	1963	-
BONNEVILLE POWER ADMINISTRATION	803	803	7.020%	2008	Yes	1963	-
BONNEVILLE POWER ADMINISTRATION	5,738	5,738	7.060%	2009	Yes	1964	-
BONNEVILLE POWER ADMINISTRATION	4,151	4,151	7.060%	2009	No	1964	-

BONNEVILLE POWER ADMINISTRATION	10,171	10,171	7.090%	2010	Yes	1965	-
BONNEVILLE POWER ADMINISTRATION	7,248	7,248	7.090%	2010	Yes	1965	-
BONNEVILLE POWER ADMINISTRATION	5,202	5,202	7.090%	2010	No	1965	-
BONNEVILLE POWER ADMINISTRATION	3,706	3,706	7.090%	2010	No	1965	-
BONNEVILLE POWER ADMINISTRATION	11,830	11,830	7.130%	2011	No	1966	-
BONNEVILLE POWER ADMINISTRATION	6,647	6,647	7.130%	2011	No	1966	-
BONNEVILLE POWER ADMINISTRATION	3,049	3,049	7.130%	2011	Yes	1966	-
BONNEVILLE POWER ADMINISTRATION	1,714	1,714	7.130%	2011	Yes	1966	-
BONNEVILLE POWER ADMINISTRATION	19,003	19,003	7.160%	2012	No	1967	-
BONNEVILLE POWER ADMINISTRATION	14,300	14,300	7.160%	2012	No	1967	-
BONNEVILLE POWER ADMINISTRATION	4,566	4,566	7.160%	2012	Yes	1967	-
BONNEVILLE POWER ADMINISTRATION	3,436	3,436	7.160%	2012	Yes	1967	-
BONNEVILLE POWER ADMINISTRATION	41,070	41,070	7.200%	2013	No	1968	-
BONNEVILLE POWER ADMINISTRATION	23,202	23,202	7.200%	2013	No	1968	-
BONNEVILLE POWER ADMINISTRATION	8,076	8,076	7.200%	2013	Yes	1968	-
BONNEVILLE POWER ADMINISTRATION	4,562	4,562	7.200%	2013	Yes	1968	-
BONNEVILLE POWER ADMINISTRATION	42,237	42,237	7.230%	2014	No	1969	-
BONNEVILLE POWER ADMINISTRATION	22,537	22,537	7.230%	2014	Yes	1969	-
BONNEVILLE POWER ADMINISTRATION	384	384	7.230%	2014	No	1969	-
BONNEVILLE POWER ADMINISTRATION	205	205	7.230%	2014	Yes	1969	-
BONNEVILLE POWER ADMINISTRATION	64,977	64,977	7.270%	2015	No	1970	-
BONNEVILLE POWER ADMINISTRATION	24,412	24,412	7.270%	2015	No	1970	-
BONNEVILLE POWER ADMINISTRATION	7,995	7,995	7.270%	2015	Yes	1970	-
BONNEVILLE POWER ADMINISTRATION	3,003	3,003	7.270%	2015	Yes	1970	-
BONNEVILLE POWER ADMINISTRATION	17,805	17,805	7.290%	2016	Yes	1971	-
BONNEVILLE POWER ADMINISTRATION	17,766	17,766	7.290%	2016	Yes	1971	-
BONNEVILLE POWER ADMINISTRATION	12,051	12,051	7.290%	2016	No	1971	-
BONNEVILLE POWER ADMINISTRATION	12,025	12,025	7.290%	2016	No	1971	-
BONNEVILLE POWER ADMINISTRATION	29,326	29,326	7.290%	2017	No	1972	-
BONNEVILLE POWER ADMINISTRATION	21,170	21,170	7.290%	2017	Yes	1972	-
BONNEVILLE POWER ADMINISTRATION	3,980	3,980	7.290%	2017	No	1972	-
BONNEVILLE POWER ADMINISTRATION	2,873	2,873	7.290%	2017	Yes	1972	-
BONNEVILLE POWER ADMINISTRATION	33,788	33,788	7.280%	2018	No	1973	-
BONNEVILLE POWER ADMINISTRATION	21,656	21,656	7.280%	2018	Yes	1973	-
BONNEVILLE POWER ADMINISTRATION	16,368	16,368	7.280%	2018	No	1973	-
BONNEVILLE POWER ADMINISTRATION	10,491	10,491	7.280%	2018	Yes	1973	-
BONNEVILLE POWER ADMINISTRATION	21,826	21,826	7.270%	2019	Yes	1974	-
BONNEVILLE POWER ADMINISTRATION	20,984	20,984	7.270%	2019	Yes	1974	-
BONNEVILLE POWER ADMINISTRATION	12,563	12,563	7.270%	2019	No	1974	-
BONNEVILLE POWER ADMINISTRATION	12,079	12,079	7.270%	2019	No	1974	-
BONNEVILLE POWER ADMINISTRATION	32,026	32,026	7.250%	2020	No	1975	-
BONNEVILLE POWER ADMINISTRATION	21,916	21,916	7.250%	2020	Yes	1975	-
BONNEVILLE POWER ADMINISTRATION	17,158	17,158	7.250%	2020	No	1975	-
BONNEVILLE POWER ADMINISTRATION	11,742	11,742	7.250%	2020	Yes	1975	-
BONNEVILLE POWER ADMINISTRATION	61,025	61,025	7.230%	2021	No	1976	-
BONNEVILLE POWER ADMINISTRATION	2,212	2,212	7.230%	2021	Yes	1976	-
BONNEVILLE POWER ADMINISTRATION	33,702	33,702	7.210%	2022	No	1977	-
BONNEVILLE POWER ADMINISTRATION	5,380	5,380	7.210%	2022	Yes	1977	-
BONNEVILLE POWER ADMINISTRATION	4,981	4,981	7.210%	2022	Yes	1977	-
BONNEVILLE POWER ADMINISTRATION	3,948	3,948	7.210%	2022	No	1977	-
BPA PROGRAM	24,222	-	8.950%	2013	Yes	1978	9
BPA PROGRAM	17,770	-	8.950%	2013	No	1978	9
BPA PROGRAM	4,619	-	8.950%	2013	Yes	1978	9
BPA PROGRAM	3,389	-	8.950%	2013	No	1978	9
BPA PROGRAM	21,228	-	9.900%	2014	No	1979	9
BPA PROGRAM	14,340	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	10,610	-	9.900%	2014	No	1979	9
BPA PROGRAM	2,888	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	605	-	9.900%	2014	No	1979	9
BPA PROGRAM	165	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	98	-	9.900%	2014	No	1979	9
BPA PROGRAM	66	-	9.900%	2014	Yes	1979	9
BPA PROGRAM	26,690	-	9.450%	2014	No	1979	6

BPA PROGRAM	21,977	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	9,804	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	7,010	-	9.450%	2014	No	1979	6
BPA PROGRAM	6,026	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	1,870	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	1,371	-	9.450%	2014	No	1979	6
BPA PROGRAM	150	-	9.450%	2014	No	1979	6
BPA PROGRAM	102	-	9.450%	2014	Yes	1979	6
BPA PROGRAM	44,811	-	13.000%	2015	No	1980	9
BPA PROGRAM	39,696	-	13.000%	2015	No	1980	9
BPA PROGRAM	10,806	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	9,292	-	13.000%	2015	No	1980	9
BPA PROGRAM	4,253	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	2,263	-	13.000%	2015	No	1980	9
BPA PROGRAM	1,707	-	13.000%	2015	No	1980	9
BPA PROGRAM	1,469	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	616	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	56	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	21	-	13.000%	2015	No	1980	9
BPA PROGRAM	10	-	13.000%	2015	Yes	1980	9
BPA PROGRAM	119,775	-	16.600%	2016	No	1981	9
BPA PROGRAM	54,821	-	16.600%	2016	Yes	1981	9
BPA PROGRAM	277	-	16.600%	2016	No	1981	9
BPA PROGRAM	127	-	16.600%	2016	Yes	1981	9
BPA PROGRAM	46,980	-	14.400%	2017	No	1982	4
BPA PROGRAM	37,455	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	34,221	-	14.400%	2017	No	1982	12
BPA PROGRAM	15,663	-	14.400%	2017	Yes	1982	12
BPA PROGRAM	9,975	-	14.400%	2017	No	1982	4
BPA PROGRAM	4,566	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	551	-	14.400%	2017	No	1982	4
BPA PROGRAM	439	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	80	-	14.400%	2017	No	1982	12
BPA PROGRAM	36	-	14.400%	2017	Yes	1982	12
BPA PROGRAM	23	-	14.400%	2017	No	1982	4
BPA PROGRAM	11	-	14.400%	2017	Yes	1982	4
BPA PROGRAM	77,807	-	14.150%	2017	No	1982	7
BPA PROGRAM	3,677	-	14.150%	2017	No	1982	7
BPA PROGRAM	2,932	-	14.150%	2017	Yes	1982	7
BPA PROGRAM	402	-	14.150%	2017	No	1982	7
BPA PROGRAM	105	-	14.150%	2017	Yes	1982	7
BPA PROGRAM	43	-	14.150%	2017	No	1982	7
BPA PROGRAM	34	-	14.150%	2017	Yes	1982	7
BPA PROGRAM	37,235	-	12.250%	2018	No	1983	9
BPA PROGRAM	6,708	-	12.250%	2018	Yes	1983	9
BPA PROGRAM	814	-	12.250%	2018	No	1983	9
BPA PROGRAM	203	-	12.250%	2018	No	1983	9
BPA PROGRAM	35	-	12.250%	2018	Yes	1983	9
BPA PROGRAM	4	-	12.250%	2018	No	1983	9
BPA PROGRAM	1	-	12.250%	2018	Yes	1983	9
BPA PROGRAM	29,806	-	11.700%	2018	No	1983	6
BPA PROGRAM	154	-	11.700%	2018	No	1983	6
BPA PROGRAM	40	-	11.700%	2018	Yes	1983	6
BPA PROGRAM	39,741	-	10.850%	2018	No	1983	11
BPA PROGRAM	205	-	10.850%	2018	No	1983	11
BPA PROGRAM	54	-	10.850%	2018	Yes	1983	11
BPA PROGRAM	50,567	-	13.050%	2019	No	1984	9
BPA PROGRAM	9,109	-	13.050%	2019	Yes	1984	9
BPA PROGRAM	276	-	13.050%	2019	No	1984	9
BPA PROGRAM	48	-	13.050%	2019	Yes	1984	9
BPA PROGRAM	25,283	-	12.300%	2019	No	1984	11
BPA PROGRAM	4,555	-	12.300%	2019	Yes	1984	11
BPA PROGRAM	138	-	12.300%	2019	No	1984	11

BPA PROGRAM	24	-	12.300%	2019	Yes	1984	11
BPA PROGRAM	15,182	-	11.250%	2029	Yes	1985	6
BPA PROGRAM	460	-	11.250%	2029	No	1985	6
BPA PROGRAM	80	-	11.250%	2029	Yes	1985	6
BPA PROGRAM	84,278	-	11.250%	2030	No	1985	6
BPA PROGRAM	68,194	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	30,161	-	8.150%	1996	No	1986	3
BPA PROGRAM	870	-	8.150%	1996	No	1986	3
BPA PROGRAM	443	-	8.150%	1996	No	1986	3
BPA PROGRAM	169	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	157	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	5	-	8.150%	1996	No	1986	3
BPA PROGRAM	1	-	8.150%	1996	Yes	1986	3
BPA PROGRAM	180,054	-	8.950%	2031	No	1986	6
BPA PROGRAM	57,354	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	40,000	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	11,668	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	5,161	-	8.950%	2031	No	1986	6
BPA PROGRAM	3,117	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	1,819	-	8.950%	2031	No	1986	6
BPA PROGRAM	722	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	76	-	8.950%	2031	No	1986	6
BPA PROGRAM	29	-	8.950%	2031	Yes	1986	6
BPA PROGRAM	96,519	-	8.350%	1992	No	1987	6
BPA PROGRAM	2,498	-	8.350%	1992	No	1987	6
BPA PROGRAM	983	-	8.350%	1992	No	1987	6
BPA PROGRAM	86,958	-	9.550%	2017	No	1987	7
BPA PROGRAM	4,113	-	9.550%	2017	No	1987	7
BPA PROGRAM	3,274	-	9.550%	2017	Yes	1987	7
BPA PROGRAM	569	-	9.550%	2017	No	1987	7
BPA PROGRAM	48	-	9.550%	2017	No	1987	7
BPA PROGRAM	38	-	9.550%	2017	Yes	1987	7
BPA PROGRAM	37,342	-	9.550%	2032	No	1987	7
BPA PROGRAM	7,903	-	9.550%	2032	No	1987	7
BPA PROGRAM	3,109	-	9.550%	2032	Yes	1987	7
BPA PROGRAM	631	-	9.550%	2032	No	1987	7
BPA PROGRAM	618	-	9.550%	2032	Yes	1987	7
BPA PROGRAM	285	-	9.550%	2032	No	1987	7
BPA PROGRAM	112	-	9.550%	2032	Yes	1987	7
BPA PROGRAM	54,409	-	9.300%	2032	Yes	1987	4
BPA PROGRAM	43,236	-	9.300%	2032	No	1987	4
BPA PROGRAM	1,409	-	9.300%	2032	No	1987	4
BPA PROGRAM	554	-	9.300%	2032	No	1987	4
BPA PROGRAM	281	-	9.300%	2032	No	1987	4
BPA PROGRAM	111	-	9.300%	2032	No	1987	4
BPA PROGRAM	43,417	-	9.500%	2018	No	1988	2
BPA PROGRAM	283	-	9.500%	2018	No	1988	2
BPA PROGRAM	30,004	-	9.900%	2033	Yes	1988	6
BPA PROGRAM	9,018	-	9.900%	2033	No	1988	6
BPA PROGRAM	752	-	9.900%	2033	Yes	1988	6
BPA PROGRAM	226	-	9.900%	2033	No	1988	6
BPA PROGRAM	45,870	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	28,513	-	9.500%	2033	No	1988	2
BPA PROGRAM	27,887	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	22,923	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	20,677	-	9.500%	2033	No	1988	2
BPA PROGRAM	1,725	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	954	-	9.500%	2033	No	1988	2
BPA PROGRAM	933	-	9.500%	2033	Yes	1988	2
BPA PROGRAM	518	-	9.500%	2033	No	1988	2
BPA PROGRAM	56,257	-	8.950%	1999	Yes	1989	5
BPA PROGRAM	16,909	-	8.950%	1999	No	1989	5
BPA PROGRAM	1,410	-	8.950%	1999	No	1989	5

BPA PROGRAM	424	-	8.950%	1999	No	1989	5
BPA PROGRAM	41,894	-	9.250%	2030	No	1990	1
BPA PROGRAM	3,824	-	9.250%	2030	Yes	1990	1
BPA PROGRAM	3,008	-	9.250%	2030	No	1990	1
BPA PROGRAM	1,149	-	9.250%	2030	No	1990	1
BPA PROGRAM	96	-	9.250%	2030	Yes	1990	1
BPA PROGRAM	29	-	9.250%	2030	No	1990	1
BPA PROGRAM	54,145	-	7.550%	1995	No	1991	2
BPA PROGRAM	5,855	-	7.550%	1995	No	1991	2
BPA PROGRAM	80,000	-	6.200%	1995	No	1992	4
BPA PROGRAM	50,000	-	7.000%	1997	No	1992	4
BPA PROGRAM	28,300	-	7.000%	1997	No	1992	4
BPA PROGRAM	107,800	-	6.600%	2000	No	1992	8
BPA PROGRAM	107,700	-	7.250%	2007	No	1992	8
BPA PROGRAM	147,521	-	8.800%	2032	No	1992	4
BPA PROGRAM	2,479	-	8.800%	2032	No	1992	4
BPA PROGRAM	150,000	-	8.130%	2032	No	1992	7
BPA PROGRAM	50,000	-	6.050%	1998	No	1993	10
BPA PROGRAM	99,962	-	8.350%	2033	No	1993	10
BPA PROGRAM	130,000	-	7.800%	2033	No	1993	2
BPA PROGRAM	100,000	-	7.500%	2033	No	1993	4
BPA PROGRAM	110,000	110,000	6.950%	2033	No	1993	8
BPA PROGRAM	49,489	-	7.100%	1998	No	1994	5
BPA PROGRAM	43,155	-	7.100%	1998	No	1994	5
BPA PROGRAM	4,456	-	7.100%	1998	No	1994	5
BPA PROGRAM	55,000	-	7.650%	1999	No	1994	9
BPA PROGRAM	50,000	-	8.200%	2034	No	1994	5
BPA PROGRAM	50,000	50,000	7.050%	2034	No	1994	1
BPA PROGRAM	108,400	108,400	6.850%	2034	No	1994	10
BPA PROGRAM	50,000	50,000	6.850%	2034	No	1994	10
BPA PROGRAM	55,000	-	8.350%	2001	No	1995	1
BPA PROGRAM	65,000	65,000	7.700%	2025	No	1995	8
BPA PROGRAM	49,933	37,663	7.700%	2025	No	1995	7
BPA PROGRAM	54,378	54,378	5.900%	2003	No	1996	1
BPA PROGRAM	70,000	70,000	7.050%	2006	No	1996	8
BPA PROGRAM	22,600	22,600	6.800%	2004	No	1997	1
BPA PROGRAM	80,000	80,000	6.900%	2005	No	1997	5
BPA PROGRAM	111,254	111,254	6.650%	2007	No	1997	8
BPA PROGRAM	75,300	75,300	6.000%	2008	No	1998	4
BPA PROGRAM	40,000	40,000	5.750%	2008	No	1998	8
BPA PROGRAM	72,700	72,700	6.000%	2009	No	1998	5
BPA PROGRAM	40,000	40,000	6.200%	2011	No	1998	5
BPA PROGRAM	106,600	106,600	5.850%	2023	No	1998	8
BPA PROGRAM	112,400	112,400	5.850%	2028	No	1998	8
BPA PROGRAM	50,000	50,000	6.650%	2029	No	1998	10
BPA PROGRAM	98,900	98,900	6.700%	2032	No	1998	5
BPA PROGRAM	40,000	40,000	6.200%	2002	No	1999	9
BPA PROGRAM	26,200	26,200	5.950%	2004	No	1999	5
BPA PROGRAM	48,920	48,920	5.900%	2014	No	1999	2
BPA PROGRAM	15,300	15,300	6.850%	2003	No	2000	8
BPA PROGRAM	40,000	40,000	6.400%	2003	No	2000	11
BPA PROGRAM	50,000	50,000	7.000%	2004	No	2000	7
BPA PROGRAM	53,500	53,500	7.150%	2005	No	2000	1
BPA PROGRAM	40,000	40,000	6.750%	2006	No	2000	9
BPA PROGRAM	20,000	20,000	5.650%	2005	No	2001	1
BPA PROGRAM	60,000	60,000	6.050%	2010	No	2001	1
BPA PROGRAM	25,000	25,000	5.950%	2011	No	2001	6
BPA PROGRAM	50,000	50,000	5.750%	2011	No	2001	8
ENVIRONMENT	12,100	-	7.200%	2010	No	1995	8
ENVIRONMENT	40,000	40,000	6.950%	2012	No	1997	11
ENVIRONMENT	30,000	30,000	6.050%	2010	No	2001	1

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin, $3.5m Amor Shift, 2001 HIST YR (11/25/02)

SUMMARY OF INVESTMENTS (1000S) (FY 2005)
PROJECTED FEDERAL INVESTMENTS

Project	Original Principal	Current Principal	Interest Rate	Due Date	Replacement?	In Service Date	Month
BPA PROGRAM	272,520	272,520	6.580%	2037	No	2002	3
BPA PROGRAM	329,397	329,397	7.010%	2038	No	2003	3
BPA PROGRAM	311,633	311,633	7.180%	2039	No	2004	3
BPA PROGRAM	267,831	267,831	7.100%	2040	No	2005	3
ENVIRONMENT	-	-	6.060%	2017	No	2002	3
ENVIRONMENT	568	568	6.560%	2018	No	2003	3
ENVIRONMENT	7,369	7,369	6.770%	2019	No	2004	3
ENVIRONMENT	5,414	5,414	6.690%	2020	No	2005	3

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin, $3.5m Amor Shift, 2001 HIST YR (11/25/02)

SUMMARY OF INVESTMENTS (1000S) (FY 2005)
CAPITALIZED CONTRACT OBLIGATIONS

Date	Capitalized Contract Obligations
9/30/2002	-
9/30/2006	(984.00)
9/30/2007	(1,041.00)
9/30/2008	(1,097.00)
9/30/2009	(1,153.00)
9/30/2010	(1,212.00)
9/30/2011	(1,272.00)
9/30/2012	(1,328.00)
9/30/2013	(1,385.00)
9/30/2014	(1,445.00)
9/30/2015	(1,505.00)
9/30/2016	(1,563.00)
9/30/2017	(1,624.00)
9/30/2018	(1,689.00)
9/30/2019	(1,757.00)
9/30/2020	(1,824.00)
9/30/2021	(1,895.00)
9/30/2022	(1,969.00)
9/30/2023	(2,037.00)
9/30/2024	(2,109.00)
9/30/2025	(2,177.00)
9/30/2026	(2,240.00)
9/30/2027	(2,296.00)
9/30/2028	(2,345.00)
9/30/2029	(2,385.00)
9/30/2030	(2,418.00)
9/30/2031	(2,438.00)
9/30/2032	(2,438.00)
9/30/2033	(2,434.00)
9/30/2034	(2,411.00)
9/30/2035	(2,378.00)
9/30/2036	(2,339.00)
9/30/2037	(2,292.00)
9/30/2038	(2,236.00)
9/30/2039	(2,185.00)
9/30/2040	(2,137.00)
Total	(66,038.00)

CHAPTER 12

REPAYMENT STUDY RESULTS
REVISED STUDY
FY 2005

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin, $3.5m Amor Shift, 2001 HIST YR (11/25/02)

SUMMARY OF INTEREST (1000S) (FY 2005)

Project	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
BUREAU OF RECLAMATION	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BONNEVILLE POWER ADMINISTRATION	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BUREAU	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
CORPS OF ENGINEERS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL CORPS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
OTHER APPROPRIATIONS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BONNEVILLE POWER ADMINISTRATION	66,903	65,279	63,484	61,755	61,499	57,372	53,046	48,683	40,994	34,335	29,235
	-	-	-	-	-	-	-	-	-	-	-
TOTAL APPROPRIATIONS	66,903	65,279	63,484	61,755	61,499	57,372	53,046	48,683	40,994	34,335	29,235
	-	-	-	-	-	-	-	-	-	-	-
BPA BORROWING	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BPA PROGRAM	127,594	140,416	155,800	167,736	170,454	170,348	170,792	172,121	176,208	181,328	183,541
ENVIRONMENT	4,595	4,614	4,882	5,312	5,493	5,493	5,493	5,493	5,493	3,678	3,678
PREMIUMS	3,993	391	1,514	-	-	-	-	-	-	-	-
(LESS INTEREST INCOME)	-8,229	-8,760	-9,222	-9,485	-9,718	-9,723	-9,719	-9,701	-9,639	-9,590	-9,558
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BPA BORROWING	127,953	136,661	152,974	163,563	166,230	166,119	166,566	167,913	172,062	175,416	177,661
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTALS	194,856	201,940	216,458	225,318	227,729	223,491	219,612	216,596	213,056	209,752	206,896

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin, $3.5m Amor Shift, 2001 HIST YR (11/25/02)

SUMMARY OF AMORTIZATION (1000S) (FY 2005)

Project	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
BUREAU OF RECLAMATION	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BONNEVILLE POWER ADMINISTRATION	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BUREAU	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
CORPS OF ENGINEERS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTAL CORPS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
OTHER APPROPRIATIONS	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BONNEVILLE POWER ADMINISTRATION	23,913	26,247	25,088	3,503	57,345	60,386	60,275	105,947	92,246	70,610	148,522
	-	-	-	-	-	-	-	-	-	-	-
TOTAL APPROPRIATIONS	23,913	26,247	25,088	3,503	57,345	60,386	60,275	105,947	92,246	70,610	148,522
	-	-	-	-	-	-	-	-	-	-	-
BPA BORROWING	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
BPA PROGRAM	107,644	116,600	126,897	153,500	110,000	111,254	115,300	72,700	60,000	115,000	-
ENVIRONMENT	-	-	-	-	-	-	-	-	30,000	-	40,000
	-	-	-	-	-	-	-	-	-	-	-
TOTAL BPA BORROWING	107,644	116,600	126,897	153,500	110,000	111,254	115,300	72,700	90,000	115,000	40,000
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
TOTALS	131,557	142,847	151,985	157,003	167,345	171,640	175,575	178,647	182,246	185,610	188,522

BONNEVILLE POWER ADMINISTRATION

TRANSMISSION REPAYMENT STUDY
OCTOBER 1, 2004 - SEPTEMBER 30, 2006 COST EVALUATION PERIOD
2004 RC IP - $20m Ref Fin, $3.5m Amor Shift, 2001 HIST YR (11/25/02)

APPLICATION OF AMORTIZATION (1000S) (FY 2005)

Date	Project	In Service	Due	Original Balance	Amount Available	Rate	Replacement?	Amount Amortized
FY 2002	BONNEVILLE POWER ADMINISTRATION	1957	2002	7,933	7,933	6.790%	No	7,933
FY 2002	BONNEVILLE POWER ADMINISTRATION	1957	2002	15,980	15,980	6.790%	Yes	15,980
FY 2002	BPA PROGRAM	1999	2002	40,000	40,000	6.200%	No	40,000
FY 2002	BPA PROGRAM	1995	2025	49,933	37,663	7.700%	No	2,644
FY 2002	BPA PROGRAM	1995	2025	65,000	65,000	7.700%	No	65,000
SUB-TOTAL		-	-	178,846	166,576	-	Yes	131,557
FY 2003	BPA PROGRAM	2000	2003	15,300	15,300	6.850%	No	15,300
FY 2003	BONNEVILLE POWER ADMINISTRATION	1958	2003	15,593	15,593	6.840%	No	15,593
FY 2003	BONNEVILLE POWER ADMINISTRATION	1958	2003	10,654	10,654	6.840%	Yes	10,654
FY 2003	BPA PROGRAM	2000	2003	40,000	40,000	6.400%	No	40,000
FY 2003	BPA PROGRAM	1996	2003	54,378	54,378	5.900%	No	54,378
FY 2003	BPA PROGRAM	1995	2025	49,933	35,019	7.700%	No	6,922
SUB-TOTAL		-	-	185,858	170,944	-	Yes	142,847
FY 2004	BPA PROGRAM	2000	2004	50,000	50,000	7.000%	No	50,000
FY 2004	BONNEVILLE POWER ADMINISTRATION	1959	2004	8,157	8,157	6.880%	No	8,157
FY 2004	BONNEVILLE POWER ADMINISTRATION	1959	2004	8,863	8,863	6.880%	Yes	8,863
FY 2004	BPA PROGRAM	1997	2004	22,600	22,600	6.800%	No	22,600
FY 2004	BPA PROGRAM	1999	2004	26,200	26,200	5.950%	No	26,200
FY 2004	BONNEVILLE POWER ADMINISTRATION	1960	2005	3,598	3,598	6.910%	No	3,598
FY 2004	BONNEVILLE POWER ADMINISTRATION	1960	2005	4,218	4,218	6.910%	Yes	4,218
FY 2004	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,805	17,805	7.290%	Yes	252
FY 2004	BPA PROGRAM	1995	2025	49,933	28,097	7.700%	No	28,097
SUB-TOTAL		-	-	191,374	169,538	-	Yes	151,985
FY 2005	BPA PROGRAM	2000	2005	53,500	53,500	7.150%	No	53,500
FY 2005	BPA PROGRAM	1997	2005	80,000	80,000	6.900%	No	80,000
FY 2005	BPA PROGRAM	2001	2005	20,000	20,000	5.650%	No	20,000
FY 2005	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,805	17,553	7.290%	Yes	3,503
SUB-TOTAL		-	-	171,305	171,053	-	Yes	157,003
FY 2006	BPA PROGRAM	1996	2006	70,000	70,000	7.050%	No	70,000
FY 2006	BONNEVILLE POWER ADMINISTRATION	1961	2006	4,468	4,468	6.950%	No	4,468
FY 2006	BONNEVILLE POWER ADMINISTRATION	1961	2006	11,271	11,271	6.950%	Yes	11,271
FY 2006	BPA PROGRAM	2000	2006	40,000	40,000	6.750%	No	40,000
FY 2006	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,766	17,766	7.290%	Yes	15,505
FY 2006	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,051	12,051	7.290%	No	12,051

FY 2006	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,805	14,050	7.290%	Yes	14,050
SUB-TOTAL		-	-	173,361	169,606	-	Yes	167,345
FY 2007	BONNEVILLE POWER ADMINISTRATION	1962	2007	19,597	19,597	6.980%	No	19,597
FY 2007	BONNEVILLE POWER ADMINISTRATION	1962	2007	4,877	4,877	6.980%	Yes	4,877
FY 2007	BPA PROGRAM	1997	2007	111,254	111,254	6.650%	No	111,254
FY 2007	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,025	12,025	7.290%	No	12,025
FY 2007	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,766	2,261	7.290%	Yes	2,261
FY 2007	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	21,170	7.290%	Yes	14,773
FY 2007	BONNEVILLE POWER ADMINISTRATION	1972	2017	3,980	3,980	7.290%	No	3,980
FY 2007	BONNEVILLE POWER ADMINISTRATION	1972	2017	2,873	2,873	7.290%	Yes	2,873
SUB-TOTAL		-	-	193,542	178,037	-	Yes	171,640
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	4,876	4,876	7.020%	No	4,876
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	4,330	4,330	7.020%	Yes	4,330
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	904	904	7.020%	No	904
FY 2008	BONNEVILLE POWER ADMINISTRATION	1963	2008	803	803	7.020%	Yes	803
FY 2008	BPA PROGRAM	1998	2008	75,300	75,300	6.000%	No	75,300
FY 2008	BPA PROGRAM	1998	2008	40,000	40,000	5.750%	No	40,000
FY 2008	BONNEVILLE POWER ADMINISTRATION	1972	2017	29,326	29,326	7.290%	No	29,326
FY 2008	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	6,397	7.290%	Yes	6,397
FY 2008	BONNEVILLE POWER ADMINISTRATION	1973	2018	16,368	16,368	7.280%	No	3,148
FY 2008	BONNEVILLE POWER ADMINISTRATION	1973	2018	10,491	10,491	7.280%	Yes	10,491
SUB-TOTAL		-	-	203,568	188,795	-	Yes	175,575
FY 2009	BONNEVILLE POWER ADMINISTRATION	1964	2009	4,151	4,151	7.060%	No	4,151
FY 2009	BONNEVILLE POWER ADMINISTRATION	1964	2009	5,738	5,738	7.060%	Yes	5,738
FY 2009	BPA PROGRAM	1998	2009	72,700	72,700	6.000%	No	72,700
FY 2009	BONNEVILLE POWER ADMINISTRATION	1970	2015	24,412	24,412	7.270%	No	24,390
FY 2009	BONNEVILLE POWER ADMINISTRATION	1970	2015	3,003	3,003	7.270%	Yes	3,003
FY 2009	BONNEVILLE POWER ADMINISTRATION	1973	2018	33,788	33,788	7.280%	No	33,788
FY 2009	BONNEVILLE POWER ADMINISTRATION	1973	2018	21,656	21,656	7.280%	Yes	21,656
FY 2009	BONNEVILLE POWER ADMINISTRATION	1973	2018	16,368	13,220	7.280%	No	13,220
SUB-TOTAL		-	-	181,816	178,668	-	Yes	178,647
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	3,706	3,706	7.090%	No	3,706
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	7,248	7,248	7.090%	Yes	7,248
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	5,202	5,202	7.090%	No	5,202
FY 2010	BONNEVILLE POWER ADMINISTRATION	1965	2010	10,171	10,171	7.090%	Yes	10,171
FY 2010	BPA PROGRAM	2001	2010	60,000	60,000	6.050%	No	60,000
FY 2010	ENVIRONMENT	2001	2010	30,000	30,000	6.050%	No	30,000
FY 2010	BONNEVILLE POWER ADMINISTRATION	1970	2015	64,977	64,977	7.270%	No	57,903

FY 2010	BONNEVILLE POWER ADMINISTRATION	1970	2015	7,995	7,995	7.270%	Yes	7,995
FY 2010	BONNEVILLE POWER ADMINISTRATION	1970	2015	24,412	22	7.270%	No	22
SUB-TOTAL		-	-	213,711	189,321	-	Yes	182,246
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	11,830	11,830	7.130%	No	11,830
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	3,049	3,049	7.130%	Yes	3,049
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	6,647	6,647	7.130%	No	6,647
FY 2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	1,714	1,714	7.130%	Yes	1,714
FY 2011	BPA PROGRAM	1998	2011	40,000	40,000	6.200%	No	40,000
FY 2011	BPA PROGRAM	2001	2011	25,000	25,000	5.950%	No	25,000
FY 2011	BPA PROGRAM	2001	2011	50,000	50,000	5.750%	No	50,000
FY 2011	BONNEVILLE POWER ADMINISTRATION	1970	2015	64,977	7,074	7.270%	No	7,074
FY 2011	BONNEVILLE POWER ADMINISTRATION	1974	2019	20,984	20,984	7.270%	Yes	5,907
FY 2011	BONNEVILLE POWER ADMINISTRATION	1974	2019	12,563	12,563	7.270%	No	12,563
FY 2011	BONNEVILLE POWER ADMINISTRATION	1974	2019	21,826	21,826	7.270%	Yes	21,826
SUB-TOTAL		-	-	258,590	200,687	-	Yes	185,610
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	19,003	19,003	7.160%	No	19,003
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	4,566	4,566	7.160%	Yes	4,566
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	14,300	14,300	7.160%	No	14,300
FY 2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	3,436	3,436	7.160%	Yes	3,436
FY 2012	ENVIRONMENT	1997	2012	40,000	40,000	6.950%	No	40,000
FY 2012	BONNEVILLE POWER ADMINISTRATION	1974	2019	12,079	12,079	7.270%	No	12,079
FY 2012	BONNEVILLE POWER ADMINISTRATION	1974	2019	20,984	15,077	7.270%	Yes	15,077
FY 2012	BONNEVILLE POWER ADMINISTRATION	1975	2020	32,026	32,026	7.250%	No	29,245
FY 2012	BONNEVILLE POWER ADMINISTRATION	1975	2020	21,916	21,916	7.250%	Yes	21,916
FY 2012	BONNEVILLE POWER ADMINISTRATION	1975	2020	17,158	17,158	7.250%	No	17,158
FY 2012	BONNEVILLE POWER ADMINISTRATION	1975	2020	11,742	11,742	7.250%	Yes	11,742
SUB-TOTAL		-	-	197,210	191,303	-	Yes	188,522
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	41,070	41,070	7.200%	No	41,070
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	8,076	8,076	7.200%	Yes	8,076
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	23,202	23,202	7.200%	No	23,202
FY 2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	4,562	4,562	7.200%	Yes	4,562
FY 2013	BONNEVILLE POWER ADMINISTRATION	1969	2014	42,237	42,237	7.230%	No	42,237
FY 2013	BONNEVILLE POWER ADMINISTRATION	1969	2014	22,537	22,537	7.230%	Yes	22,537
FY 2013	BONNEVILLE POWER ADMINISTRATION	1969	2014	384	384	7.230%	No	384
FY 2013	BONNEVILLE POWER ADMINISTRATION	1969	2014	205	205	7.230%	Yes	205
FY 2013	BONNEVILLE POWER ADMINISTRATION	1975	2020	32,026	2,781	7.250%	No	2,781
FY 2013	BONNEVILLE POWER ADMINISTRATION	1976	2021	61,025	61,025	7.230%	No	45,363

FY 2013	BONNEVILLE POWER ADMINISTRATION	1976	2021	2,212	2,212	7.230%	Yes	2,212
SUB-TOTAL		-	-	237,536	208,291	-	Yes	192,629
FY 2014	BPA PROGRAM	1999	2014	48,920	48,920	5.900%	No	48,920
FY 2014	BONNEVILLE POWER ADMINISTRATION	1976	2021	61,025	15,662	7.230%	No	15,662
FY 2014	BONNEVILLE POWER ADMINISTRATION	1977	2022	3,948	3,948	7.210%	No	3,948
FY 2014	BONNEVILLE POWER ADMINISTRATION	1977	2022	5,380	5,380	7.210%	Yes	5,380
FY 2014	BONNEVILLE POWER ADMINISTRATION	1977	2022	33,702	33,702	7.210%	No	33,702
FY 2014	BONNEVILLE POWER ADMINISTRATION	1977	2022	4,981	4,981	7.210%	Yes	4,981
FY 2014	BPA PROGRAM	2004	2039	311,633	311,633	7.180%	No	80,065
SUB-TOTAL		-	-	469,589	424,226	-	Yes	192,658
FY 2015	BONNEVILLE POWER ADMINISTRATION	1970	2015	64,977	-0	7.270%	No	-0
FY 2015	BONNEVILLE POWER ADMINISTRATION	1970	2015	24,412	-0	7.270%	No	-0
FY 2015	BPA PROGRAM	2004	2039	311,633	231,568	7.180%	No	190,656
SUB-TOTAL		-	-	401,022	231,568	-	No	190,656
FY 2016	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,766	-0	7.290%	Yes	-0
FY 2016	BPA PROGRAM	2004	2039	311,633	40,913	7.180%	No	40,913
FY 2016	BPA PROGRAM	2005	2040	267,831	267,831	7.100%	No	153,250
SUB-TOTAL		-	-	597,230	308,744	-	Yes	194,163
FY 2017	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	-0	7.290%	Yes	-0
FY 2017	BPA PROGRAM	2005	2040	267,831	114,581	7.100%	No	114,581
FY 2017	BPA PROGRAM	2006	2041	103,807	103,807	7.100%	Yes	82,944
SUB-TOTAL		-	-	392,808	218,388	-	Yes	197,525
FY 2018	ENVIRONMENT	2003	2018	568	568	6.560%	No	568
FY 2018	BPA PROGRAM	2006	2041	103,807	20,863	7.100%	Yes	20,863
FY 2018	BPA PROGRAM	2007	2042	108,279	108,279	7.100%	Yes	108,279
FY 2018	BPA PROGRAM	2008	2043	112,618	112,618	7.100%	Yes	70,664
SUB-TOTAL		-	-	325,272	242,328	-	Yes	200,374
FY 2019	BONNEVILLE POWER ADMINISTRATION	1974	2019	20,984	-0	7.270%	Yes	-0
FY 2019	ENVIRONMENT	2004	2019	7,369	7,369	6.770%	No	7,369
FY 2019	BPA PROGRAM	2008	2043	112,618	41,954	7.100%	Yes	41,954
FY 2019	BPA PROGRAM	2009	2044	116,874	116,874	7.100%	Yes	116,874
FY 2019	BPA PROGRAM	2010	2045	121,121	121,121	7.100%	Yes	37,303
SUB-TOTAL		-	-	378,966	287,318	-	Yes	203,500
FY 2020	BONNEVILLE POWER ADMINISTRATION	1975	2020	32,026	-0	7.250%	No	-0
FY 2020	ENVIRONMENT	2005	2020	5,414	5,414	6.690%	No	5,414
FY 2020	BPA PROGRAM	2010	2045	121,121	83,818	7.100%	Yes	83,818
FY 2020	BPA PROGRAM	2011	2046	125,375	125,375	7.100%	Yes	116,966
SUB-TOTAL		-	-	283,936	214,607	-	Yes	206,198
FY 2021	BONNEVILLE POWER ADMINISTRATION	1976	2021	61,025	-0	7.230%	No	-0
FY 2021	BPA PROGRAM	2011	2046	125,375	8,409	7.100%	Yes	8,409
FY 2021	BPA PROGRAM	2012	2047	129,703	129,703	7.100%	Yes	129,703
FY 2021	BPA PROGRAM	2013	2048	134,116	134,116	7.100%	Yes	70,509
SUB-TOTAL		-	-	450,219	272,228	-	Yes	208,622
FY 2022	BPA PROGRAM	2013	2048	134,116	63,607	7.100%	Yes	63,607
FY 2022	BPA PROGRAM	2014	2049	138,570	138,570	7.100%	Yes	138,570

FY 2022	BPA PROGRAM	2015	2050	142,895	142,895	7.100%	Yes	9,204
SUB-TOTAL		-	-	415,581	345,072	-	Yes	211,381
FY 2023	BPA PROGRAM	1998	2023	106,600	106,600	5.850%	No	106,600
FY 2023	BPA PROGRAM	2015	2050	142,895	133,691	7.100%	Yes	113,114
SUB-TOTAL		-	-	249,495	240,291	-	Yes	219,714
FY 2024	BPA PROGRAM	2015	2050	142,895	20,577	7.100%	Yes	20,577
FY 2024	BPA PROGRAM	2016	2051	147,016	147,016	7.100%	Yes	147,016
FY 2024	BPA PROGRAM	2017	2052	150,959	150,959	7.100%	Yes	48,518
SUB-TOTAL		-	-	440,870	318,552	-	Yes	216,111
FY 2025	BPA PROGRAM	2017	2052	150,959	102,441	7.100%	Yes	102,441
FY 2025	BPA PROGRAM	2018	2053	154,661	154,661	7.100%	Yes	116,326
SUB-TOTAL		-	-	305,620	257,102	-	Yes	218,766
FY 2026	BPA PROGRAM	2018	2053	154,661	38,336	7.100%	Yes	38,336
FY 2026	BPA PROGRAM	2019	2054	158,269	158,269	7.100%	Yes	158,269
FY 2026	BPA PROGRAM	2020	2055	161,785	161,785	7.100%	Yes	24,812
SUB-TOTAL		-	-	474,715	358,390	-	Yes	221,416
FY 2027	BPA PROGRAM	2020	2055	161,785	136,973	7.100%	Yes	136,973
FY 2027	BPA PROGRAM	2021	2056	165,153	165,153	7.100%	Yes	87,086
SUB-TOTAL		-	-	326,938	302,126	-	Yes	224,059
FY 2028	BPA PROGRAM	1998	2028	112,400	112,400	5.850%	No	112,400
FY 2028	BPA PROGRAM	2021	2056	165,153	78,067	7.100%	Yes	78,067
FY 2028	BPA PROGRAM	2022	2057	168,352	168,352	7.100%	Yes	42,583
SUB-TOTAL		-	-	445,905	358,819	-	Yes	233,050
FY 2029	BPA PROGRAM	1998	2029	50,000	50,000	6.650%	No	50,000
FY 2029	BPA PROGRAM	2022	2057	168,352	125,769	7.100%	Yes	125,769
FY 2029	BPA PROGRAM	2023	2058	171,466	171,466	7.100%	Yes	55,897
SUB-TOTAL		-	-	389,818	347,235	-	Yes	231,666
FY 2030	BPA PROGRAM	2023	2058	171,466	115,569	7.100%	Yes	115,569
FY 2030	BPA PROGRAM	2024	2059	174,425	174,425	7.100%	Yes	116,218
SUB-TOTAL		-	-	345,891	289,994	-	Yes	231,787
FY 2031	BPA PROGRAM	2024	2059	174,425	58,207	7.100%	Yes	58,207
FY 2031	BPA PROGRAM	2025	2060	177,121	177,121	7.100%	Yes	176,517
SUB-TOTAL		-	-	351,546	235,328	-	Yes	234,724
FY 2032	BPA PROGRAM	1998	2032	98,900	98,900	6.700%	No	98,900
FY 2032	BPA PROGRAM	2025	2060	177,121	604	7.100%	Yes	604
FY 2032	BPA PROGRAM	2026	2061	179,569	179,569	7.100%	Yes	143,768
SUB-TOTAL		-	-	455,590	279,073	-	Yes	243,272
FY 2033	BPA PROGRAM	1993	2033	110,000	110,000	6.950%	No	110,000
FY 2033	BPA PROGRAM	2026	2061	179,569	35,801	7.100%	Yes	35,801
FY 2033	BPA PROGRAM	2027	2062	181,779	181,779	7.100%	Yes	101,470
SUB-TOTAL		-	-	471,348	327,580	-	Yes	247,271
FY 2034	BPA PROGRAM	1994	2034	50,000	50,000	7.050%	No	50,000
FY 2034	BPA PROGRAM	1994	2034	50,000	50,000	6.850%	No	50,000
FY 2034	BPA PROGRAM	1994	2034	108,400	108,400	6.850%	No	108,400
FY 2034	BPA PROGRAM	2027	2062	181,779	80,309	7.100%	Yes	48,128
SUB-TOTAL		-	-	390,179	288,709	-	Yes	256,528
FY 2035	BPA PROGRAM	2027	2062	181,779	32,181	7.100%	Yes	32,181
FY 2035	BPA PROGRAM	2028	2063	183,792	183,792	7.100%	Yes	183,792
FY 2035	BPA PROGRAM	2029	2064	185,427	185,427	7.100%	Yes	33,498
SUB-TOTAL		-	-	550,998	401,400	-	Yes	249,471

FY 2036	BPA PROGRAM	2003	2038	329,397	329,397	7.010%	No	52,034
FY 2036	BPA PROGRAM	2029	2064	185,427	151,929	7.100%	Yes	151,929
FY 2036	BPA PROGRAM	2030	2065	186,813	186,813	7.100%	Yes	52,076
SUB-TOTAL		-	-	701,637	668,139	-	Yes	256,039
FY 2037	BPA PROGRAM	2002	2037	272,520	272,520	6.580%	No	272,520
FY 2037	BPA PROGRAM	2003	2038	329,397	277,363	7.010%	No	145
FY 2037	BPA PROGRAM	2030	2065	186,813	134,737	7.100%	Yes	4
SUB-TOTAL		-	-	788,730	684,620	-	Yes	272,669
FY 2038	BPA PROGRAM	2003	2038	329,397	277,218	7.010%	No	277,218
SUB-TOTAL		-	-	329,397	277,218	-	No	277,218
FY 2039	BPA PROGRAM	2004	2039	311,633	0	7.180%	No	0
FY 2039	BPA PROGRAM	2030	2065	186,813	134,732	7.100%	Yes	134,732
FY 2039	BPA PROGRAM	2031	2066	187,877	187,877	7.100%	Yes	134,132
SUB-TOTAL		-	-	686,323	322,609	-	Yes	268,864
FY 2040	BPA PROGRAM	2031	2066	187,877	53,745	7.100%	Yes	53,745
FY 2040	BPA PROGRAM	2032	2067	188,698	188,698	7.100%	Yes	188,698
FY 2040	BPA PROGRAM	2033	2068	189,258	189,258	7.100%	Yes	31,673
SUB-TOTAL		-	-	565,833	431,701	-	Yes	274,117
FY 2041	BPA PROGRAM	2033	2068	189,258	157,585	7.100%	Yes	157,585
FY 2041	BPA PROGRAM	2034	2069	189,376	189,376	7.100%	Yes	126,419
SUB-TOTAL		-	-	378,634	346,961	-	Yes	284,004
GRAND TOTAL		-	-	14,750,807	11,463,145	-	Yes	8,491,428

CHAPTER 13

REPAYMENT STUDY
THEORY AND OPERATION

Repayment Theory of Operation

Introduction

The BPA is required to collect revenues sufficient to meet BPA's annual transmission expenses and cover the long-term obligations of the Federal Columbia River transmission system (FCRTS).

The Repayment Program is used to determine whether a given set of annual revenues is sufficient to meet a given set of annual expenses and cover a given set of long-term obligations when applied in accordance with the requirements of Department of Energy (DOE) Order RA 6120.2. The Program is also used to determine by the minimum factor future revenues can be multiplied by to obtain a new set of revenues which will be sufficient to recover amortization costs.

The revenues and the expenses of the cost evaluation year will be assigned to all future years. This will have the effect of assigning the net operating revenue of the cost evaluation year to all future years. This has the effect of levelizing the long-term obligations over all future years.

This discussion presents the basic theory upon which the operation of the Program is based, using a minimum of terms for clarity. The complications, how they are incorporated into the program and the effects they have upon the operation of the Program are discussed.

Basic Theory

Given sets of annual revenues and annual expenses, a set of (annual) net operating revenues can be immediately obtained by subtracting the expenses from the revenues. These net operating revenues will be used for paying interest expenses and amortization payments on the long-term obligations.

Compliance with RA 6120.2 requires satisfying, for each year (i), the equation:

(1) net revenues(i) = interest expense(i) + $\sum_{j}$ payment(i, j) i= 1, 2, . . ., n

Note that for each year the payments have been summed over all obligations.

For each obligation (j) the equation:

$$(2)\ \sum_{i=1}^{k} \text{payment}(i, j) < \text{principle}(j) \qquad j= 1,2, \ldots, m,$$

for all k

must be satisfied. Note that for each obligation the payments have been summed over the years.

This set of equations has too many unknowns (payments on the principle balances) to solve simultaneously. RA 6120.2 requires that "to the extent possible, while still complying with the repayment periods established for each investment, amortization of the investment will be accompanied by application to the highest interest-bearing investment first." A method will be established for "complying with the repayment periods established for each investment" and then the investments will be amortized by "application to the highest-interest-bearing investment first" to the extent that compliance permits.

The first equation above is defined for each year and the payments are summed over the investments. The second equation is defined for each investment and the payments are summed over the years. This suggests that if the first set of equations is summed over the years and the second set of equations is summed over the investments, then it may be possible to eliminate the unknown payments between the two sets of equations:

$$(3)\ \sum_{i=1}^{k} \text{net revenues}(i) - \sum_{i=1}^{k} \text{interest expense}(i) \qquad k \text{ is the year the study is working on}$$

$$= \sum_{i=1}^{k} \sum_{j} \text{payment}(i, j) \qquad k = 1, 2, \ldots, n,$$

$$= \sum_{j} \sum_{i=1}^{k} \text{payment}(i, j) \qquad k = 1, 2, \ldots, n,$$

$$= \sum_{\text{due}} \sum_{i=1}^{k} \text{payment}(i, j) \quad + \sum_{\text{not due}} \sum_{j=1}^{k} \text{payment}(i, j) \qquad k = 1, 2, \ldots, n,$$

$$= \sum_{\text{due}} \text{payment}(i, j) \quad + \sum_{\text{not due}} \sum_{j=1}^{k} \text{payment}(i, j) \qquad k = 1, 2, \ldots, n.$$

Thus we obtain the *predictor* equation:

$$(4) \sum_{i=1}^{k} \text{net revenues}(i) - \sum_{i=1}^{k} \text{interest expense}(i) - \sum_{\text{due}} \text{principle}(j)$$

$$= \sum_{\text{not due}} \sum_{i=1}^{k} \text{payment}(i, j) \qquad k = 1, 2, \ldots, n.$$

For each of the future years the right-hand side of the above equation represents the amount of the accumulated payments on “not due,” i.e., "highest interest" investments. The left side indicates how the amount of payments which can be made on these investments in compliance with RA 6120.2 can be evaluated. If, for some future year, this amount is evaluated as being zero or negative, then this equation implies that no payment can be made on an investment which is "not due" until a later year and still comply with RA 6120.2. Accordingly, if the amount is evaluated as being zero or negative for any future year, then payments can be made only on "highest interest" investments which come due on or before the first such year.

Thus, a new equation is obtained for each year (k). Payments will be made on the highest interest-bearing investment which permits compliance with sets of equations (1), (2) and (4). The amount paid will be the maximum amount which permits compliance with these three sets of equations.

Application

The fourth set of equations has the problem that a payment made in the current year will affect interest expenses in future years since interest will no longer have to be paid on that portion of the investment. This problem is currently solved by using an iterative approach (i.e., a method of successive approximations). The program finally includes no future interest in evaluating the left-hand side of the fourth set of equations. Consequently, the evaluation of revenues available for "not due" payments will be excessive. As the years are processed and the interest of a given year becomes known, it is used in the fourth set of equations for all later years. The fourth set of equations is thus modified, and the evaluation of revenues available for "not due" payments is reduced. Amortizing some investment on its due date could violate equations of the first and fourth sets; then a negative balance will occur. A second iteration will be necessary.

In the second iteration, the interest payments from the first iteration will be used for future years. Since "not due" payments were excessive in the first iteration, the interest payments of the first iteration will be less than the true interest payments. But they will be more accurate than no interest at all and negative balances will be reduced.

If the revenues are sufficiently high, then with successive iterations the interest expenses will converge and the balances will be reduced to zero. A solution is found. But, if the revenues are not sufficiently high, then compliance with the fourth set of equations will force payments on high-interest obligations to be delayed into the future. This will cause an increase in the interest charges leaving still less revenues available for the high-interest obligations. With successive iterations, interest expenses will converge and negative balances will increase. No solution is found.

Deferral of Annual Expenses

If a set of revenues determined by a set of basic revenues and an assumed rate change cause deferral of annual expenses in any given year, it is necessary to modify the revenue equation for that year to the form:

deferral + net revenue = interest expense

and, for one or more later years, to the form:

net revenue = interest expense + payment on deferral + amortization.

Any change in the revenue equation will manifest itself in the predictor equation, and equation (4) must be modified accordingly.

These deferrals and payments on deferral are initially assumed to be zero. When their values are actually determined, they are used in equation (4) for future years and they are saved in tables so that in case another iteration is necessary, the deferrals and payments from this iteration can be used in the place of future deferrals and payments for the next iteration.
Historical deferrals are processed similar to other investments with the exception that in accordance with RA 6120.2, they are amortized before any other investment.

Calculation of Interest Expense

Annual interest is computed by applying the applicable interest rate (r) to that portion of the principle (p) which was unpaid at the beginning of the year in accordance with RA 6120.2. The interest on a new obligation is half this amount as specified.

BPA is authorized to accrue an interest credit on its cash balance as an offset against its interest expense. For lack of more detailed information, the net revenues are assumed to accumulate, at a uniform rate throughout the year, except for the interest paid on the bonds at midyear.

If it were assumed that the half-year's interest on new obligations implied that all new obligations came at midyear, then there would never be any mid-year interest on a new bond. It will, instead, be assumed that new bonds have a uniform probability of I/T of coming in at any time of the year, where T is equal to one year. Then the probability that the bond will come in by the time (t) is

$$\int_0^t (1/T)dt = t/T \Big|_{t=0}^{t=t} = t/T.$$

The probability that it will come in by the end of the year T is T/T = 1.

(This result can be seen without calculus). Assume that t and T are expressed in days and the year is not a leap year. By assumption the probability that the bond will come in on any particular day is 1/365. Thus, the probability that the bond has come in on or before day t is

(t)(1/365) = t/365 = t/T.

For example, suppose that we want to find the probability that a given bond came in on or before the 100th day of the year. The desired probability is

(100)(1/365) = 100/365 = t/T.

The amount of interest that the bond will probably incur during a time interval (dt) coming at time (t) is the probability that the bond has come in multiplied by the amount of interest that the bond would incur in that interval:

di = (t/T)rpdt.

The amount of interest which will probably be incurred by time (t) is:

$$i = \int_0^t di = \int_0^t (t/T)rp\, dt = (t^2/2T)\, rp \Big|_{t=0}^{t=t} = (t^2/2T)\, rp.$$

In particular, the amount of interest incurred by midyear (T/2) would be rpT/8; and the amount incurred by the end of the year would be rpT/2, which is consistent with RA 6120.2.

(Midyear and end-of-year interest on new bonds can also be derived without calculus. We will consider the midyear interest first. To compute probable midyear interest on new bonds, note that the probability of the bond issue date being in the first half year is 1/2. If the bond issue date is in the first half year, it will, on the average, accrue interest for half of the first half the first year. Midyear interest on new bonds will be only 1/2 of the interest of a full year. Since interest for an entire year is

$i = rpT,$

mid-year interest on a new bond will be

$i = (1/2)^3\, rpT = rpT/8.$

Interest on new bonds for the whole year is

$i = rpT/2$

because, on average, the bond will have incurred interest for only half of the year.)

Premiums and Call Provisions

BPA's current bonds either have a provision that they cannot be redeemed for at least five years and that a premium must be paid if they are redeemed before the due date; a provision that they cannot be redeemed for at least five years and that a premium must be paid if they are redeemed five years before the due date; or, a provision that they can be called within five years without paying a premium. The premium calculation is a fraction of one year's interest which is proportional to the

life of the bond. This premium must be included in the revenue equation and, as a consequence, will manifest itself in the predictor equation.

The first method used for incorporating the premiums in the solution method was to save the annual premiums between iterations and use those of the previous iteration to predict the future annual premiums. This resulted in some instability when premiums shifted from one year to another. It resulted in an inability to solve when the revenues were close to the minimum revenues.

The second method was to consider the premium as being the amount which *would be* paid in the current year, but as being "due" when the principle was due. But, since the *would-be* premium decreased each year until actually paid, the predictor equation was adjusted each year to reflect the reduction in the premiums. This tended to introduce an inaccuracy in the predictor equation. Adjustment of the predictor equation for changes in premiums would make a small amount of revenues available in the following year for amortizing high-interest investments.

The premium actually paid is still stored by the year it is paid, for use in the output routines. The premium *actually paid* is now also stored by the year that the principle is due. 'This "predicted penalty" is used in the predictor equation for the following iteration. With this modification any change in premium always affects the predictor equation in the same year, the year that the principle is due. This change only occurs when the premium is actually paid, and the amount of this change decreases as the solution converges.

The premiums also affect the "highest interest first" selection process. If the life of the bond is (T) and the time of redemption is (t), then the premium is given by the equation:

$$\text{premium} = rp(T-t)/T.$$

or if the bond has a callable at par provision in the remaining (t1) Years of its life, the premium is given by the equation:

premium = rp(T-t-t1)/(T-t1) if $t \leq (T-t1)$ otherwise premium = 0

The total interest paid on the bond is given by the equation:

interest = rpt.

Combining the two we get:

interest + premium = rpt + rp(T-t)/T

= rpt(1-1/T) + rp.

or, in the case of the bond callable at par

interest + premium = rpt + rp(T-t-t1)/(T-t1)

= rpt(1-1/(T-t1)) + rp

if t > T-t1 then = rpt

Thus, such a premium is equivalent to a fixed premium together with a reduced interest rate. This fixed premium must be paid (unless bond is callable at par) regardless of when the bond is redeemed. This "reduced" interest rate will be used when comparing obligations to determine which one should be retired first.

Surplus Revenues

In the later years of the Study (and conceivably at any time during the Study), there may be revenues available but nothing on which to expend them on. Thus, a "surplus" term must be included in the revenue equation and will consequently manifest itself in the predictor equation. Since the surplus is not obligatory, it will be carried on the right-hand side of the predictor equation.

Minimizing Revenues

The repayment program has provisions for determining a set of minimum revenues sufficient to meet a given set of annual expenses and cover a given set of long-term obligations.

If unequal maximum and minimum revenue change parameters are supplied to the program, or if the (unequal) default parameters are used, then the program will perform a *binary search* to determine the minimum sufficient revenues. The set of revenues is multiplied by the minimum revenue change and the resulting revenues are tested for sufficiency. If revenues are not sufficient, this is indeed a minimum revenue change, e.g., no lower change will provide sufficient revenues. If sufficient, then this revenue becomes a maximum; it is divided by two to obtain a new minimum candidate and this cycle is repeated, if necessary, until a minimum change is obtained.

If a maximum has not yet been determined, then the given revenues are multiplied by the maximum revenue change and the resulting revenues are tested for sufficiency. If sufficient, this is indeed a maximum revenue change, i.e., the maximum of the range we must consider. If insufficient, then this revenue change becomes a new minimum: it is multiplied by two to obtain a new maximum candidate and this cycle is repeated, if necessary, until a maximum change is obtained.

A revenue change halfway between the present maximum and minimum is now determined and the resulting revenues are tested for sufficiency. If sufficient, this midpoint becomes a new maximum; if insufficient, it becomes a new minimum. In either case, the difference between the maximum and the minimum is only half of what it was previously. If this difference is greater than some specified (or default) accuracy, then this cycle is repeated until the difference is less than the specified accuracy. When this difference is less than the specified accuracy, then the current maximum rate change provides the *minimum sufficient* revenues at this accuracy.

REPAYMENT PROGRAM LOGIC

The diagrams on the following pages show the flow of logic in BPA's repayment program. The first diagram shows the logic of the binary search used to locate minimum sufficient revenues. A necessary part of this search is the test for sufficiency. The logic of the test for sufficiency is shown on the remaining two diagrams.

The equations which are referred to are:

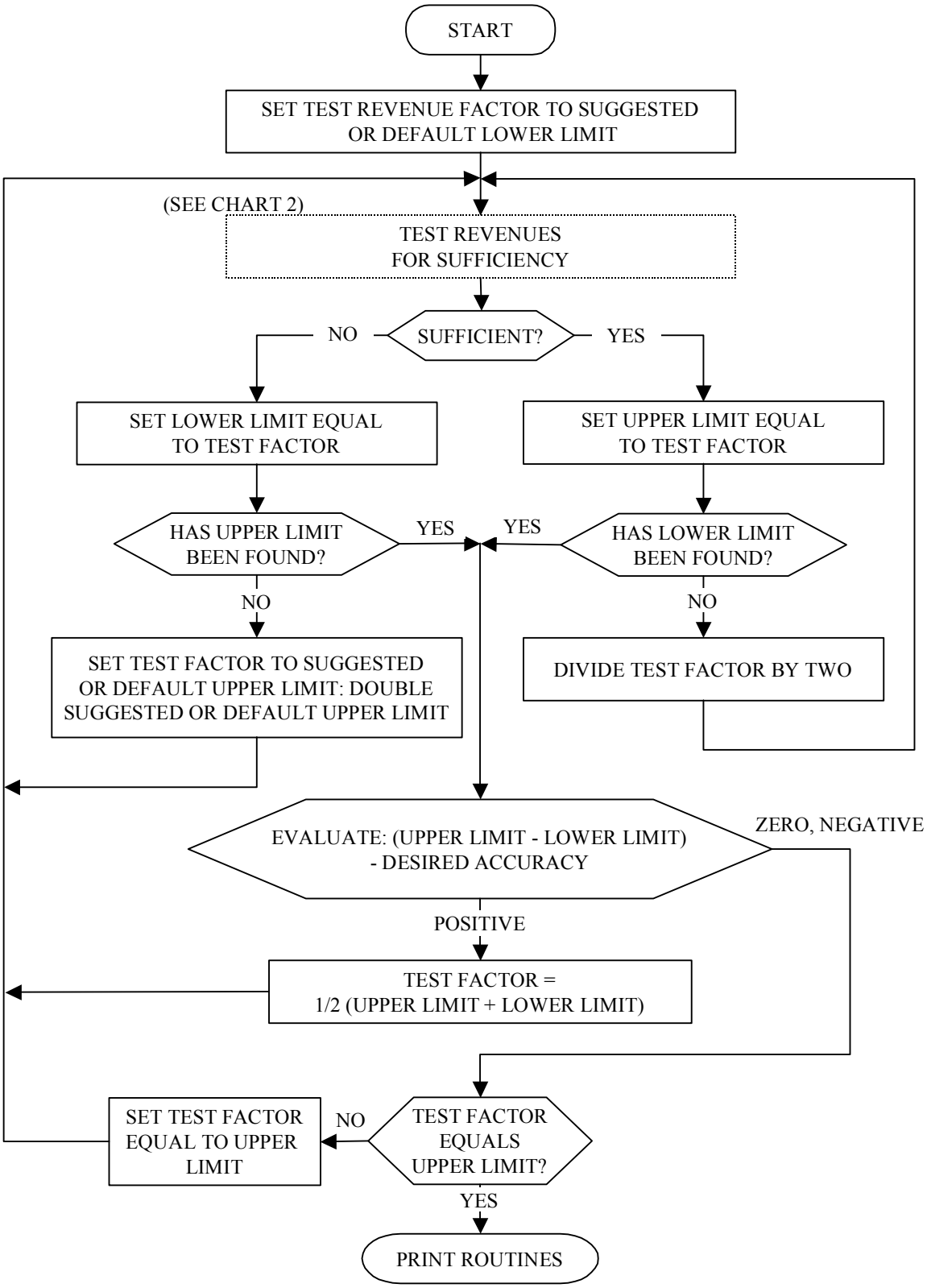
Revenue Equation: Net revenues of each year are expended on interest and payments on the principles.

Investment equation: The payments on each investment are less than or equal to the principle of that investment (and equal to the principle of that investment after the investment is due).

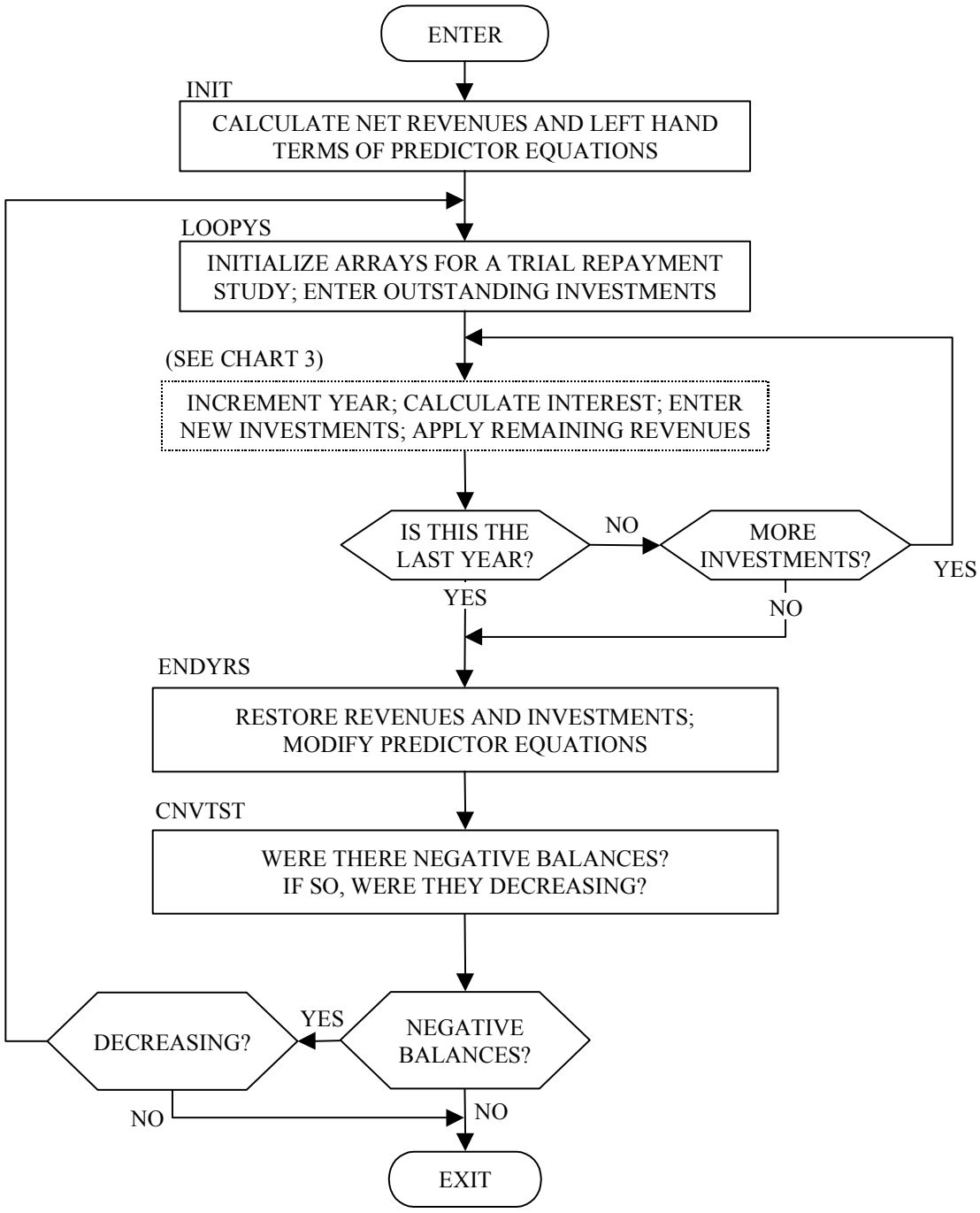
Predictor equation: For each future year the accumulated revenues less the accumulated interest less the accumulated investments due is equal to the accumulated payments on high interest rate investments which are not due.

These equations are developed in more detail elsewhere in both the Study and the Documentation.

REPAYMENT PROGRAM
(BINARY SEARCH)
CHART 1



REPAYMENT PROGRAM
(TEST FOR SUFFICIENCY)
CHART 2



REPAYMENT PROGRAM
(APPLICATION OF REVENUES)
CHART 3